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JULY 4, 1955

STEEL

The Metalworking Weekly

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Better Materials Handling

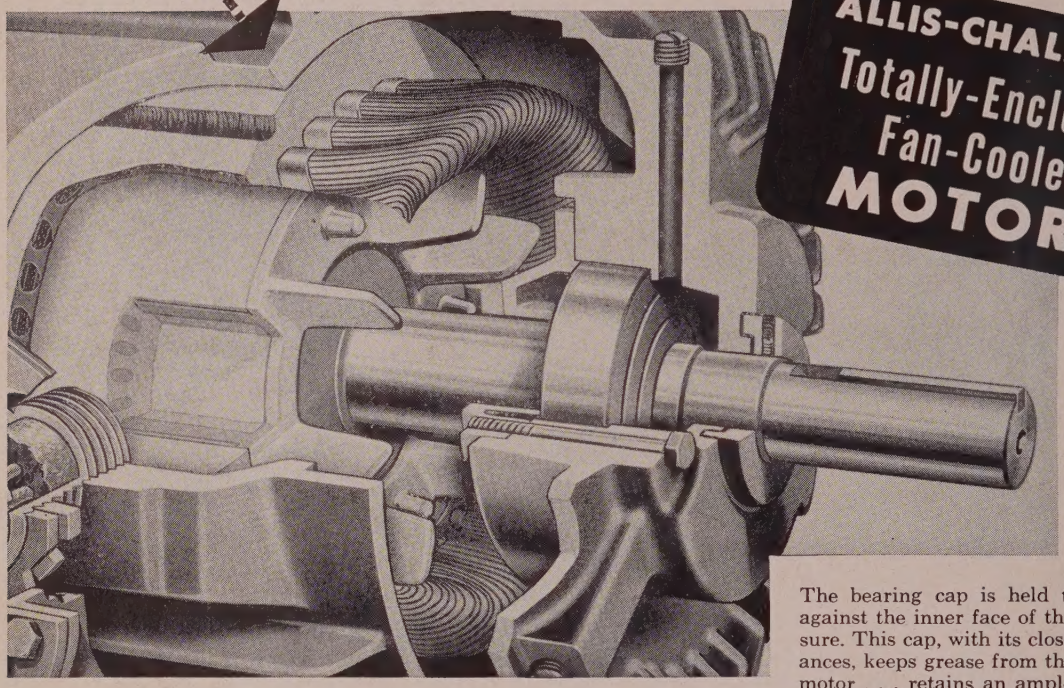
etting the Stage
or Efficiency

—page 68

ONTENTS — PAGE 5

1913

Get Both
bearing features



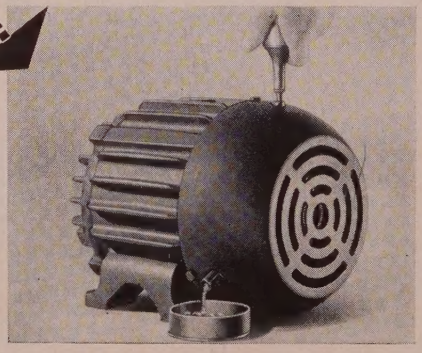
ALLIS-CHALMERS
Totally-Enclosed Fan-Cooled MOTORS

fully enclosed and protected

The bearing cap is held tightly in place against the inner face of the bearing enclosure. This cap, with its close running clearances, keeps grease from the interior of the motor . . . retains an ample supply within the bearing enclosure.

At the outer side of the bearing, double labyrinth seals keep grease in, also keep dirt out. What's more, large grease reservoirs act as additional dirt traps.

. . . yet easy to grease



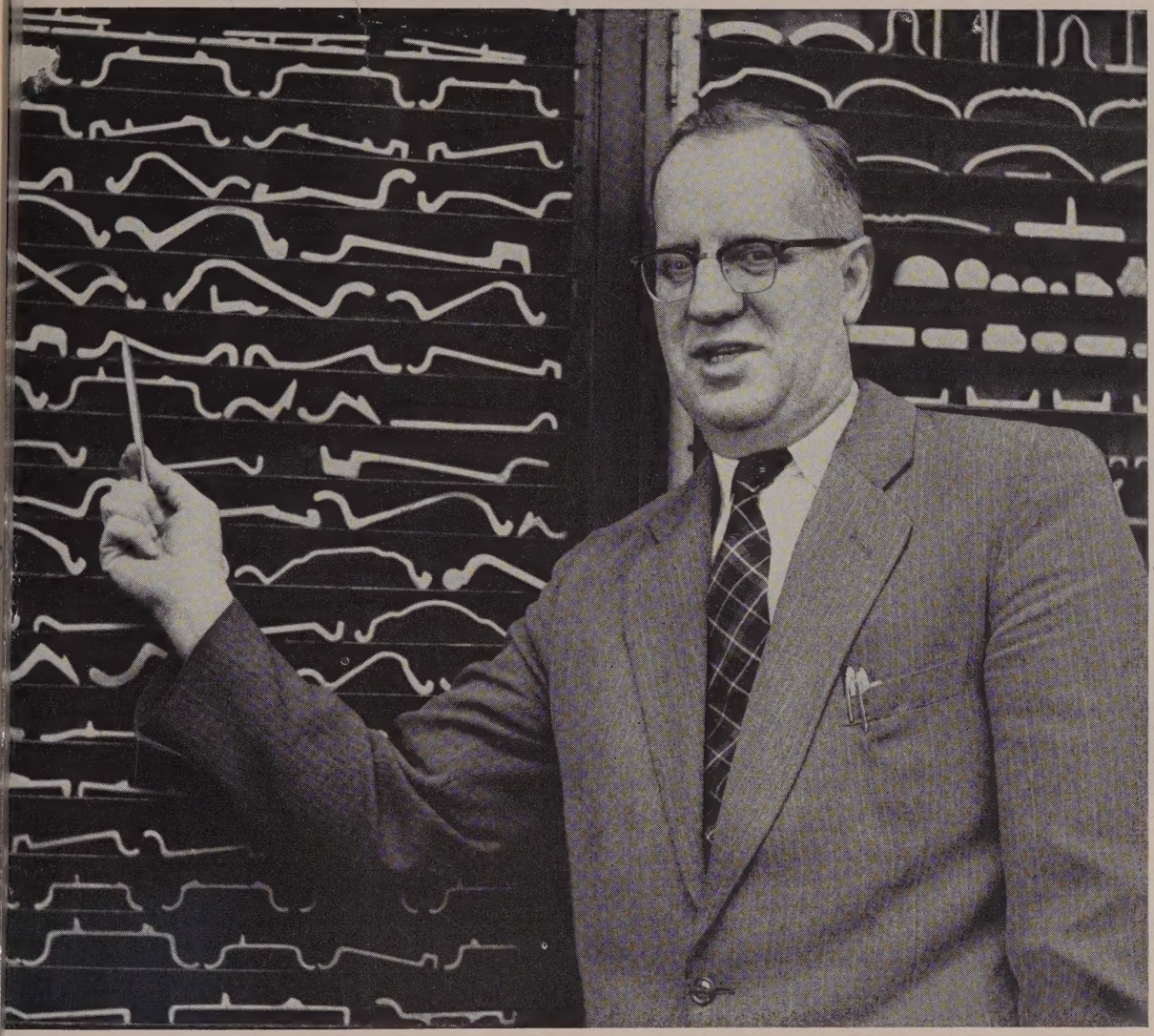
You can lubricate the bearings without dismantling the motor. Pipe-tapped holes in the bearing housings at three points provide both means for inserting new grease and a means of flushing out old grease.

Look for the extra bolts on the end housing . . . the sign of greater value. Ask your Allis-Chalmers representative or Authorized Distributor to show you a cutaway section of this maintenance-cutting design. Or write Allis-Chalmers, Milwaukee 1, Wisconsin, for Bulletin 51B7225.

A-4609

ALLIS-CHALMERS

A-C ALLIS-CHALMERS



Could a special rolled section save money for you?

It wouldn't surprise us a bit if a special section, perhaps similar to one of these, could save you a barrel of money.

Special sections, hot-rolled to your drawings and specifications, have many advantages. They eliminate costly machining, forming and fabricating; they allow you freedom of design. Rolling puts extra metal where you want it for strength; eliminates excess metal for economy.

The display of special sections shown here gives you some idea of the wide range of shapes that are rolled by Bethlehem, helping manufacturers in many lines to reduce their costs.

Automotive tire rims and door hinges, lawn mower cutter bars, steel sash, sled runners and fence posts are a few examples of the varied uses of Bethlehem special sections.

Perhaps we could help you determine how special sections can cut your production costs. We suggest you contact the Bethlehem sales office most convenient to you.

Bethlehem carbon-steel bar products include an unusually broad range of hot-rolled carbon bars in standard and special sections and bar-size shapes. Also semi-finished products, including blooms, billets and slabs.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

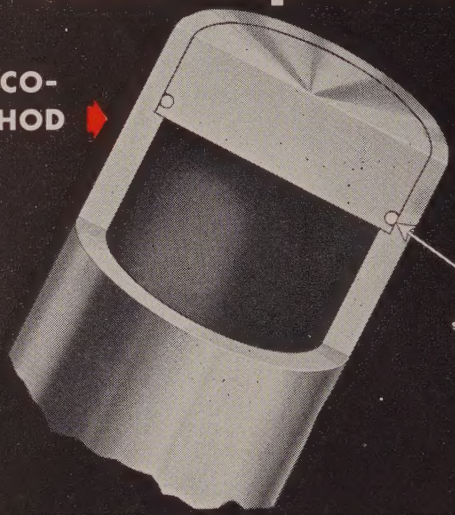
BETHLEHEM STEEL

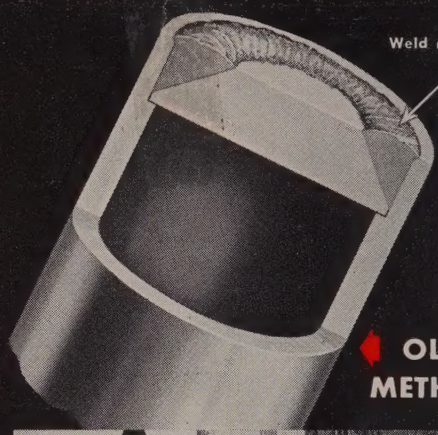
BETHLEHEM STEEL

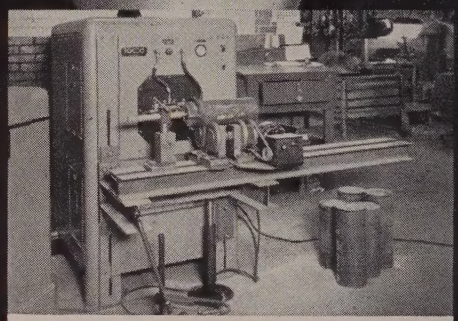
Production Doubled

Cost Cut 50%

Product Improved...







TOCCO heating station with inductor and fixture for silver brazing cylinder and cylinder cap assemblies.

with TOCCO* Induction Heating

The experience of The Commercial Shearing and Stamping Company, who use TOCCO for silver-brazing hydraulic cylinder assemblies, is typical of the benefits obtained by America's leading metal-working plants who use TOCCO Induction Heating for brazing, hardening, heat-treating, forging and melting operations.

More Production with TOCCO

a. Heating time per piece cut from 15.3 minutes to 2 minutes on 5¼″ I.D. cylinder.

b. Machining and cleaning operations, formerly required, are not needed after TOCCO brazing.

Lower Costs with TOCCO

a. Through a reduction in time required for each piece.

b. Through the elimination of scrap and reworks.

c. Because, since TOCCO is automatic, operator need not be trained or especially skilled.

Improved Product with TOCCO

a. Because of better looks and sales appeal.

b. Because distortion is minimized.

c. Because of elimination of field failures due to severe stress pockets.

TOCCO Engineers — can probably find applications in your plant, too, where TOCCO Induction Heating can increase output, cut unit costs and improve your product. Such a survey costs you nothing—and may save you a great deal.

THE OHIO CRANKSHAFT COMPANY

TOCCO

*Trade Mark Reg. U. S. Pat. Off.

Mail Coupon Today

NEW **FREE** BULLETIN

THE OHIO CRANKSHAFT CO.
Dept. S-7, Cleveland 1, Ohio

Please send copy of "Typical Results of TOCCO Induction Brazing and Soldering."

Name_____

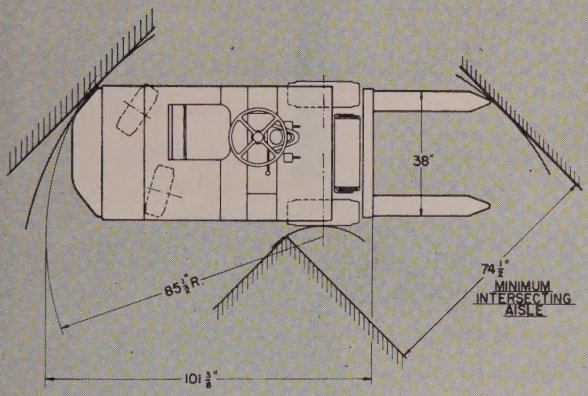
Position_____

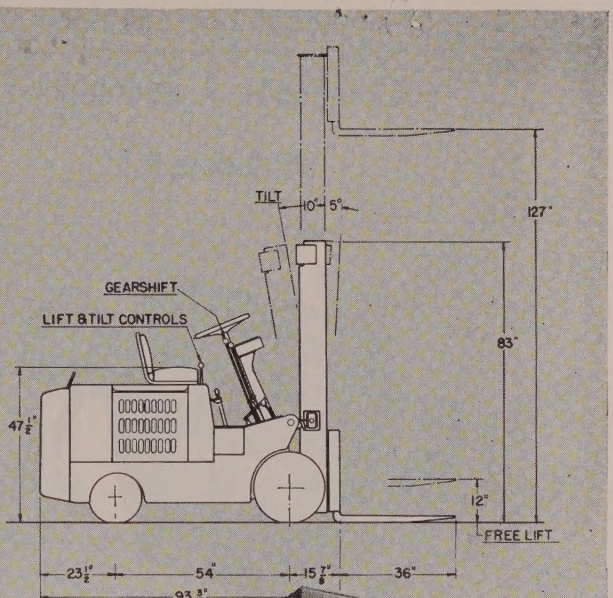
Company_____

Address_____

City_____ Zone____ State_____

BAKER "FG" GAS FORK TRUCK...





Dimensional Drawing of FG-60, 6000 pound capacity.

why "BALANCED DESIGN" makes it the best!

"Balanced Design" means that every component be engineered to its specific function. Further that all elements be matched and coordinated to work together for top efficiency, maximum dependable service and longest life.

In the "Balanced Design" Baker FG Gas Trucks, for example, you get an integrated power train, consisting of drive axle, transmission and clutch, selected and engineered to be the best possible unit to perform its required function. Features include: compact rigid construction without troublesome universal joints, split clutch housing for easy accessibility, and *single oil supply for entire assembly*.

"Balanced Design" also assures you that the power plant is not merely an automotive engine modified for truck use. It is a heavy-duty industrial engine specially engineered for rugged industrial truck service and built by an outstanding manufacturer. Our specifications call for moving parts to balance much closer than ordinary engine parts: pistons balanced to ± grams instead of ounces, crankshaft to 4 inch-ounces and connecting rods to 2 grams.

These are some of the reasons why Baker "FG" is the only gas fork truck with a full 6 months' warranty, and why we say "BALANCED DESIGN" makes it the best.

Baker "FG" gas fork trucks are available with 3,000, 4,000, 5,000 and 6,000 pound capacities. Specific bulletins can be obtained by writing The Baker-Raulang Co., 1259 West 80th Street, Cleveland 2, Ohio.

Baker
HANDLING EQUIPMENT

8 REASONS WHY THE BAKER FG FORK TRUCK IS FIRST IN ITS CLASS...

1. LOWER INITIAL COST—FG-40 (4000 lb.) $4295. Other models at proportionate savings.

2. LONGER WARRANTY PERIOD—Baker quality permits full 6 months warranty.

3. HIGHER LIFT—Mast design allows higher standard lift than ordinary trucks.

4. LOWER MAINTENANCE COSTS—Designed for easier and less frequent servicing.

5. MORE MANEUVERABLE—Short turning radius cuts aisle width, adds floor space.

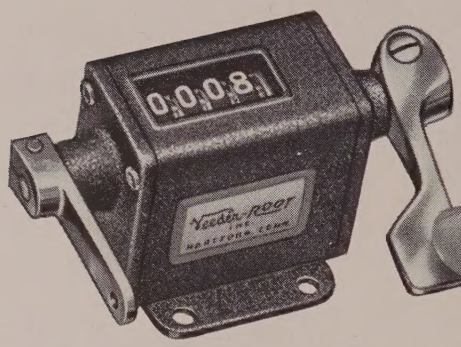
6. EASIER TO OPERATE—Greater visibility . . . easy-to-work controls.

7. GREATER STABILITY—Lower center of gravity, higher "stability factor" ratio.

8. BETTER BRAKING—Full floating, self-equalizing, self-energizing brakes.

5G5

Quick Lever Reset



Saves Time— Speeds Work

Added Evidence that—

Everyone Can Count on VEEDER-ROOT

Where time consumed in resetting is at a premium . . . on short machine-runs, inspection, military equipment and other applications . . . this new time-tested Quick-Reset Ratchet Counter is exactly the time-saving device you need. Just depress the easy-acting lever on the right side through 45° . . . *all 4 figures reset instantly to zeros.* And a thumb-lever may be used on the left side also if the counter is to be operated manually.

This compact, standard counter, now readily available from stock, is one of scores of Veeder-Root Counters (both standard and special) for manual, mechanical and electrical operation in every field from electronics to atomics. Just name what you want to count . . . and "The Name that Counts" will help you do the job. Write:

VEEDER-ROOT INCORPORATED
HARTFORD 2, CONNECTICUT

Chicago 6, Ill. • New York 19, N. Y. • Greenville, S. C.
Montreal 2, Canada • Dundee, Scotland
Offices and Agents in Principal Cities

"The Name that Counts"

STEEL
The Metalworking Weekly

JULY 4, 1955
Vol. 137 No. 1

METALWORKING OUTLOOK, 29

The Editor's Views, 33

STEEL's Quarterly Survey, 37
Components inventories growing slowly

Power Transmission Sales Gain, 38
As the economy goes, so goes this industry

Put Financial Reports To Work, 40
Simplified accounting system pays off for Rockwell

J&L's Gottschalk Solves Shipping Problems, 45
Routing raw materials and finished steel is his stock in trade

U. S. Auto Exports Lose Ground, 47
But growing overseas investment colors profit picture

Windows of Washington, 42
Mirrors of Motordom, 49
The Business Trend, 53
Men of Industry, 57
New Products, 87
Behind the Scenes, 6
Letters to the Editors, 10
Calendar of Meetings, 25
New Literature, 97

TECHNICAL OUTLOOK, 67

Setting the Stage for Efficiency, 68
Handling: Plant and equipment work together

Machining—1955: Boring and Drilling, 72
The fourth article in a series on machining

Diecastings: Natural for Home Tools, 74
Low cost and durability favor their use

Pickling at Half the Cost, 76
Savings ride on more hooks, less handling

New Life for Metals, 82
Vacuum melting gives better properties

MARKET OUTLOOK, 99

Steel Operations, 99
Price Comparisons, 100
Nonferrous Roundup, 102
Nonferrous Prices, 104
Steel Prices, begin 106
Scrap Prices, 124

Editorial & Business Staffs, 16. Advertising Index, 129. Editorial Index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 W. 39th St., New York 18, N.Y.

Published every Monday by Penton Publishing Co., Penton Bldg., Cleveland 13, O. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year, $7.50; two years, $15; all other countries, one year, $20. Single copies (current issues), 50 cents. Metalworking Yearbook issue, $2. Accepted as controlled circulation publication at Cleveland. Copyright, 1955, Penton Publishing Co.

MEMO TO: P.A.
re: Call Seymour for top quality BRASS
C.E.A.

More and more buyers, designers and production men are learning that Seymour's new, up-to-the-minute production machinery and three quarter century of experience assures them of top quality Brass with . . .

• UNIFORMITY OF GAUGE for the full width and length of the metal.

• MAINTENANCE OF CLOSER TOLERANCES which is made possible by the use of modern, precision rolling equipment.

These pace-setting standards are rapidly raising Seymour-quality Brass to the top of the "Preferred" List for hundreds of executives who specify and buy primary metals.

Equally famous for their exceptional quality are Seymour NICKEL SILVER • PHOSPHOR BRONZE • WELDING ROD • BRIGHT (Plating) NICKEL • NICKEL ANODES

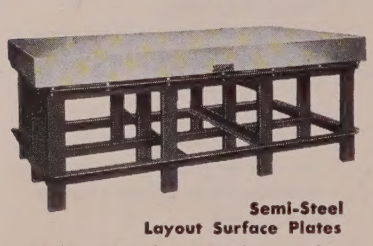
SEYMOUR
The Seymour Manufacturing Co.
SEYMOUR, CONNECTICUT.

NOW TWO TYPES OF CHALLENGE SURFACE PLATES

NEW! CLOVIS BLACK GRANITE
Rated Class A. Surface accuracy guaranteed.

FINE GRAIN SPECIAL ANALYSIS SEMI-STEEL
Precision ground or hand-scraped

STILL ONE STANDARD OF CHALLENGE QUALITY!



Semi-Steel Layout Surface Plates

High compressive strength . . . Low coefficient of expansion. 16 standard sizes, 6" thick — other sizes to order. Also available for sectional assembly into unlimited sizes.

Cast-Iron Top Work Benches

Four sizes, three styles. For individual use or on a continuous line. With self-contained storage facilities.

Other Challenge Precision Products:
Clamp Edge Layout Plates • Reading Tables • Lapping Plates • Welding Tables • Surface Plates • Bench Plates • Surface Plate Equipment.

See the full line of Challenge Clovis Black Granite and Semi-Steel Surface Plates in the new Challenge Catalog. Send for your free copy today!

786

Challenge®

THE CHALLENGE MACHINERY CO.
Office, Factories and Show Room:
GRAND HAVEN, MICH.

behind the scenes

Chauvinistic Note

Remember the groups that hampered the United States during World War II? They organized under patriotic slogans, affected varicolored shirts, duped gold star mothers, confused public figures and won the enthusiastic support of every reluctant 1-A in the country. They turn up in every war, in every country. During the Spanish Civil War, a general declared: "I will attack with five columns. As the four approach, the fifth will rise within the enemy lines."

Once upon a time, 92 years ago today, a fifth column rose in New York against the Union. We mention it because it fell upon a holiday, a patriotic holiday that deserves some attention, but we hesitate to get stirred up. Apparently it isn't fashionable any more to grow excited over things like that. The business press, in particular, is too practical to emote over a patriotic holiday, too preoccupied with methods and materials to grow starry-eyed over a flag, much too conservative to shoot off firecrackers and shout "hooray!"

Well, back in 1863 so much emotion was stirred up on this date the country practically went nuts. It was the second greatest holiday in our history. In the space of that one day the Confederate States of America were repulsed at Gettysburg. Grant took Vicksburg, Miss., and freed the Mississippi river; and the biggest fifth column this country ever saw erupted in New York and was crushed. It was a day long to be remembered.

That's all. We just thought it would be nice to say something about the date line that STEEL carries this week. It is the Fourth of July.

Michigan Shows Soo

While we're on subjects of Great Significance (capitalized, of course), it should be recorded that a short time back employees of the Penton Publishing Co. were treated to a noonday movie that told us all about the Soo locks. As part of the centennial celebration in connection with the opening of the locks at Sault Ste. Marie, Mich., the University of Michigan went into a huddle with itself and produced a film in sound and color. Not knowing what to call it, but remembering that the subject was the locks of Sault Ste. Marie, the University hit on the title, "The Locks of Sault Ste. Marie."

The film is remarkably interesting, and if you belong to a reputable firm or organization, and are curious about ships, you may borrow this movie by writing to the Audio-Visual Education Center, University of Michigan, 4028 Administration Bldg., Ann Arbor, Mich. A nominal charge covers shipping and insurance.

Wanted: Brief Case

Faie A. Hurd, Industrial Distributor Marketing Associates, 400 W. Madison St., Chicago, sends us a copy of his booklet "Psychology in Selling" with the polite expectation that it "may deal in subjects of interest to you professional writers." What a fox you are, Mr. Hurd! We ain't a professional writer, but we couldn't resist the implied compliment . . . so we read the booklet. It's so practical we've decided to study it, and become a professional salesman.

We Give You a Man Who . . .

A great variety of answers arrived concerning Wolfgang's target. Most of them were right, but no two answers were exactly alike when carried beyond three decimal points: Diameter of bulls'-eye, 3.76; width inner ring, 0.67; middle ring, 1.02; outer ring, 1.64.

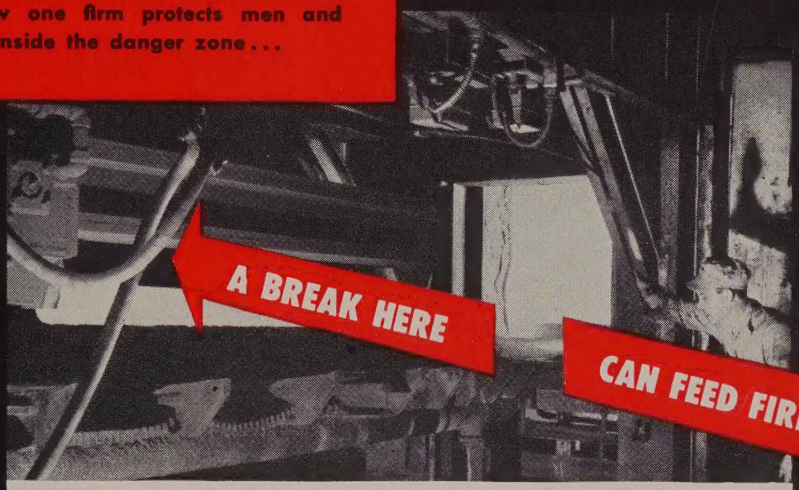
Sometimes a casual question can serve to start a discussion, bridge a conversational gap or trigger a chain of events culminating in anything from a fist fight to matrimony. So, to rest you from figures for a spell, here's a question to play with: Of whom was it said: "He was a foe without hate, a friend without treachery, a soldier without cruelty, a victim without murmuring"?

Shrdlu

(Metalworking Outlook—Page 29)

HYDRAULIC DANGER ZONE

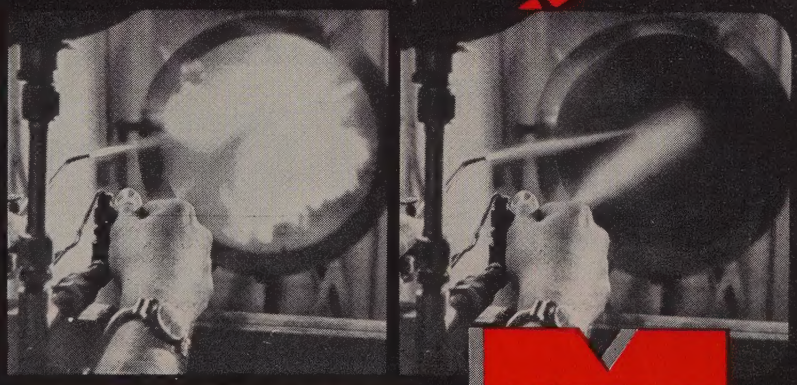
Ordinary hydraulic fluid, escaping under pressure, can start a fire 40 ft. or more from a broken line! Is your plant safe? Here's how one firm protects men and machines inside the danger zone . . .



THE SPANG-CHALFANT PLANT of THE NATIONAL SUPPLY CO. switched to fire-resistant Pydraul F-9 hydraulic fluid after a line break involving flammable fluid caused a furnace shutdown, damaged electrical connections and lost 6 hours' production time. The plant operates this Hagan Rotary furnace continuously while a hydraulic boom containing 800 gallons of Pydraul moves white-hot billets in and out of 2250°F. heat. Recently, Pydraul's safety was proved when a ruptured hose sprayed fluid over hot billets and furnace. Result: No damage, no injuries and no time lost! *Pydraul: Reg. U. S. Pat. Off.*

PROOF OF PYDRAUL SAFETY

In photo at left, ordinary hydraulic fluid sprayed into oxyacetylene torch burns explosively. At right, Pydraul does not!



FREE! New 19-page technical booklet, "PYDRAUL F-9," gives facts on Pydraul tests, advantages, properties, uses and installation. Mail coupon to: Organic Chemicals Division, MONSANTO CHEMICAL COMPANY, Box 478-P-5, St. Louis 1, Mo.

MONSANTO
CHEMICALS AND PLASTICS

SERVING INDUSTRY...WHICH SERVES MANKIND

VICKERS® Controlarc

MAGNETIC AMPLIFIER-RECTIFIER

FULL TIME,

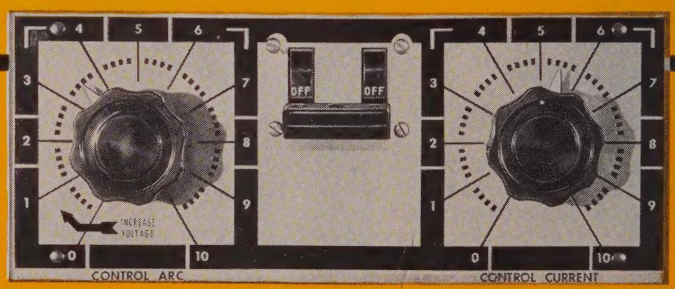
INDIVIDUAL CONTROL
of both current and voltage

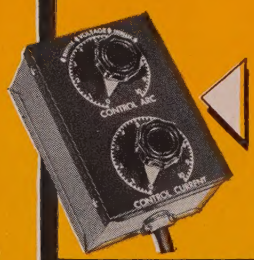
- EASY, CLEAN ARC STRIKES
- HOT STARTS, IMMEDIATE PENETRATION
- NO ARC "POP OUTS"
- NO CURRENT DROP-OFF DURING PASS
- UNIFORM FUSION, STEADY RATE OF META DEPOSIT

PATENTED VICKERS MAGNETIC AMPLIFIERS

CONTROLARC automatic control is made possibl by the patented Vickers Self-saturating Magneti Amplifier with exclusive voltage-sensing, feed-bac control circuits. Constantly analyzing welding volt age and automatically adjusting welding current t arc changes, Vickers Magnetic Amplifier maintain ideal arc characteristics, through the entire weldin range, under all welding conditions.

VOLTAGE and CURRENT INDIVIDUALLY CONTROLLED...





Only Vickers Controlarc offers complete remote control of both voltage and current through the entire welding range. The operator never has to go to the welder to change range switches or taps. Two separate dials individually control voltage and current.

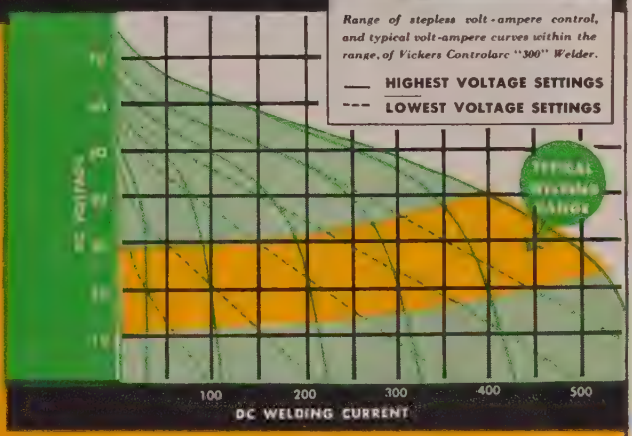
Separate, complete control of both voltage and current makes it possible to set any volt-ampere combination within the output range of the particular Controlarc model being used —from minimum voltage at minimum current to maximum voltage at maximum current.

DC Welder 200 300 400 AMPERE MODELS

AUTOMATIC ARC CONTROL

FULL RANGE VOLTAGE CONTROL

. . . separate from current control, makes it possible to choose the exact arc characteristic for every job and every welding condition. Controlarc full range, stepless voltage control is not limited to a few "average" settings, with blind spots in between. With Controlarc voltage control, the weldor not only can select the arc characteristic for a basic welding position—flat, overhead or vertical—but can pinpoint the setting to his personal preference for the particular condition under which he is welding.



ELECTRICAL SPECIFICATIONS and RATINGS

The Vickers CONTROLARC [illegible] with NEMA Standards [illegible]

RATINGS						ELECTRICAL PERFORMANCE			
Rated Amperes at 40 Volts Load, 60% Duty Cycle	Amperes Welding Current Range		Primary Amperes Input per Phase		RATED AMPERES	AT RATED LOAD			
	Minimum at 20 Load Volts	Maximum at 40 Load Volts	230 Volts	460 Volts		PRIMARY KVA	PRIMARY KW	EFFICIENCY %	POWER FACTOR %
200	3	250	42	21	200	16.5	11.6	69	71
300	6	375	62	31	300	24.7	17.4	69	71
400	12	500	84	42	400	33	23.2	69	71

VICKERS CONTROLARC DC WELDER
Construction Features

DOWNDRAFT COOLING
No "vacuum cleaner" floor dust pickup

RUST PROTECTED
Interior surfaces zinc chromated

RECTIFIERS
Conservatively rated for long life. Special finish protects from corrosive atmospheres

SEALED-IN LUBRICATION OF FAN MOTOR BEARINGS

DUCT COOLED TRANSFORMER
Air ducts in windings for high-efficiency cooling

CONCENTRATED WEIGHT
Low center of gravity

SKID MOUNTED
Portable mounting available

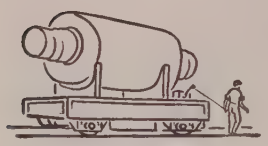
NO MOVING CORES OR COIL ASSEMBLIES
NO GEAR OR OTHER MECHANICAL DRIVES
ALL PARTS QUICKLY AND EASILY ACCESSIBLE

TERRITORIES OPEN FOR QUALIFIED DEALERS. WRITE FOR DETAILS.

VICKERS ELECTRIC DIVISION

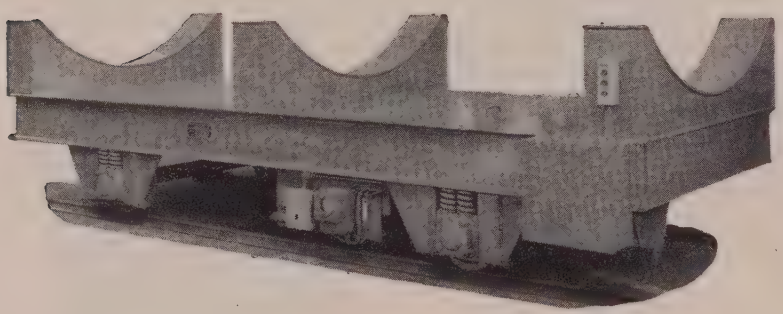
VICKERS Inc. a unit of The Sperry Corporation
1859 LOCUST STREET • SAINT LOUIS 3, MISSOURI

ATLAS SAFETY TYPE "SHORT HAUL" TRANSFERS



Atlas Safety-Type Transfers provide safe, low-cost service. Available with gas or diesel-electric, cable reel, or storage battery power. Atlas Transfers handle any type of load . . . and the heavier the load, the greater the savings.

20-TON STORAGE BATTERY FLAT CAR



20-TON STORAGE-BATTERY WITH CRADLE FOR PIPE

Request "Walk-Along" Bulletin 1283

THE ATLAS CAR & MFG. CO.

ENGINEERS MANUFACTURERS

1140 IVANHOE RD. CLEVELAND 10, OHIO, U. S. A.

LETTERS TO THE EDITORS

Sell with Color

We are impressed with your article, "Sales Appeal Starts with Finish" (June 13, page 108), and wish to compliment you on it. We would like to obtain 20 reprints for our internal sales organization.

Guy H. Burt
Lloyd Products Co.
Providence, R. I.

I have just finished reading this excellent article. Selecting the right color for a product or package is becoming increasingly important. We could use several copies if available.

E. J. Busch
Manager, Industrial Advertising
Gates Rubber Co. Sales Division Inc.
Denver

No Credit Line

We feel disappointed after reading the article, "Metalworking Aids Road Safety" (June 20, page 64).

We spent much time and effort getting together material on products we make for highway purposes. The paragraph mentioning our company describes only one of our products, and that one is the least in volume. The lighting poles and foundation piling certainly deserved to be covered.

We appreciate use of the photograph showing the overhead sign supports, but why was there no credit line?

A. S. Fromm
Advertising Manager
Union Metal Mfg. Co.
Canton, O.

• *We are well aware of the time and effort spent in preparing the material you submitted, but lack of space prevented us from using more. One of our major problems in editing* STEEL *is finding a spot for all the excellent material available. Omission of the photo credit line was an oversight for which we apologize.*

Tip on Carbide Cutters

In the second article of your 1955 Machining series, "Milling" (May 23, page 100), you mention indexable inserting carbide tip milling cutters. Who produces them?

W. F. Stuker
Purchasing Agent
Taylor Forge & Pipe Works
Chicago

• *The manufacturer is: Detroit Milling Cutter Co., 28625 Grand River, Farmington, Mich.*

Freeing Steel of Oxides

I am interested in the new process for making steel free of included oxides, as mentioned in the item, "Tube Deoxidation," in the Technical Outlook column of June 6 (page 79). Please send

(Please turn to page 12)

NATCO ENGINEERS

OVERCOME DISTORTION

DURING MACHINING

WITH

STRESSPROOF®

SEVERELY COLD-WORKED, FURNACE-TREATED STEEL BARS

The Lead Screw Tapper Spindles of this Natco Three-way Holetapper required machining operations hard to combine without serious distortion.

The front end of each spindle had to be machined as a taper socket for collet application. When the driving keyway and the tool knockout elongated-splined-holes were machined, distortion caused out-of-round taper holes which would not receive the collet correctly.

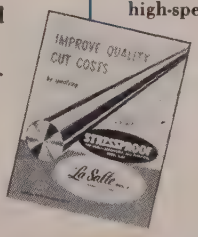
The rear end of each spindle had to be machined as a driving spline shaft which slides under load. Since the diameter of the spline is relatively small in proportion to the shaft length, any attempt to heat treat caused distortion hard to correct by straightening.

And at the center of each spindle, an accurate lead screw had to be machined by a thread grinding operation. It was found that the finish was much more easily obtained when STRESSPROOF was used.

STRESSPROOF eliminated both the problem of the out-of-round taper holes on the front of each spindle . . and the distortion of the driving-spline-shaft.

STRESSPROOF makes a better part at a lower cost.

National Automatic Tool Co. has for many years used STRESSPROOF in the manufacture of important operating parts for this Three-way Holetapper, as well as for other Natco high-speed machine tools.



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Helpful Data Bulletin No. 15 "Improve Quality —Cut Costs"

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La Salle STEEL CO.

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MANUFACTURERS OF AMERICA'S MOST COMPLETE LINE OF QUALITY COLD-FINISHED STEEL BARS

Norgren — a complete line of PRESSURE REGULATORS

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plus many others designed to meet specific performance requirements.

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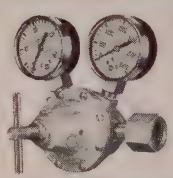


CYLINDER GAS PRESSURE REGULATORS

Reduce cylinder gas pressures up to 3000 psi to maximum delivery pressures of 50, 75, 175 or 450 psi. 2 inlet ports, 3 outlet ports. ¼". Series 4C and 6C.

PILOT-CONTROLLED AIR REGULATORS, INTEGRAL TYPE

Extreme precision over wide range. Reduce line pressures up to 400 psi to working pressure from 2 to 120 psi. 30, 60, or 120 psi maximum delivery. ½", ¾", 1". Series 20AC.

BUTANE PRESSURE REGULATORS

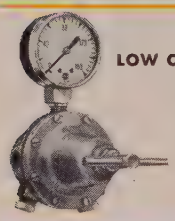
For primary stage pressure regulation. Reduce line pressures up to 250 psi to desired working pressure up to 50 psi. ½", ¾", 1". Series 2E.

PILOT-CONTROLLED REGULATORS, REMOTE CONTROL TYPE

Reduce line pressures up to 400 psi to working pressure from 2 to 120 psi. 30, 60 or 120 psi maximum delivery pressure. ½", ½" ¾", 1". Series 20AA.

STEAM PRESSURE REGULATORS

For saturated steam and hot water up to 450° F. Reduce line pressures up to 400 psi to maximum delivery pressures of 50, 75, 125 or 250 psi. ½", ¾", 1". Series 2B.



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REGULATOR-FILTER UNIT

Automatically filters air and regulates air pressure. Replaceable, transparent or metal filter bowl. Choice of 3 filter elements. ¼", ⅜". Series 5A and 5N.

Phone Norgren representative listed in telephone directory classified section under "Norgren Pneumatic Products" or

C. A. Norgren CO.
3412 So. Elati, Englewood, Colo.

WRITE FOR CATALOG

on Norgren Pressure Regulators, Oil Fog Lubricators, Air Filters, Valves and Hose Assemblies.

LETTERS

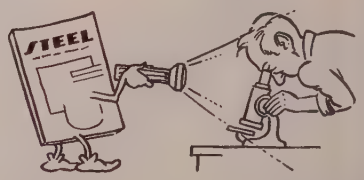
(Concluded from page 10)

me the address of the Manufacturers Chemical Corp., which is introducing it in this country.

J. L. Burns
Metallurgical Laboratory
Power Tube Division
Raytheon Mfg. Co.
Waltham, Mass.

• *The address: Manufacturers Chemical Corp., 633 Broadway, New York, N. Y.*

Spotlight on Research



Your article, "Small Firms Step Up Research" (May 23, page 63), provides an interesting description of the functions of the independent laboratory. I feel it will be of assistance to many of the small business facilities.

Philip E. Nelson
Acting Chief
Products Assistance Division
Office of Procurement & Technical Assistance
Small Business Administration
Washington

Two-in-One Machine

I would appreciate additional information on the item, "Double Duty," in the Technical Outlook column of Feb. 28 (page 87). It concerns use of a special machine for machining two different castings having a like surface.

R. H. Bowen
Manufacturing Engineering
Aircraft Accessory Turbine Dept.
General Electric Co.
West Lynn, Mass.

• *We are sending you a reprint of the article, "Duplication Licked with Two-in-One Tooling" (May 9, page 98). This describes the machine in greater detail.*

Gives New Slant

I read with great interest your analysis of the Ford settlement and want to congratulate you. Your article, "GAW: A Toothless Dragon?" (June 13, page 66), gives a new slant on a matter which most of us drew a rather hasty and, apparently, unintelligent conclusion.

Edwin C. Barringer
Executive Vice President
Institute of Scrap Iron & Steel
Washington

I would appreciate several copies . . .

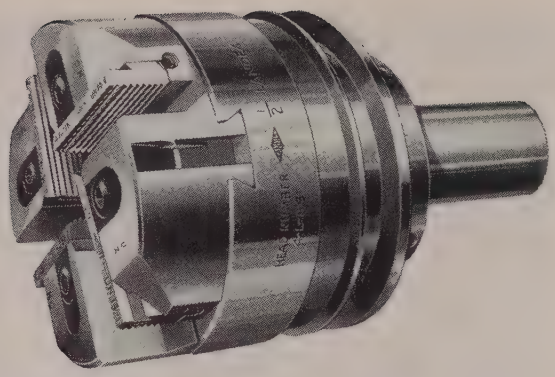
Phillip W. Grassell
President
Wilson Steel & Wire Co.
Chicago

New Flexible Rubber

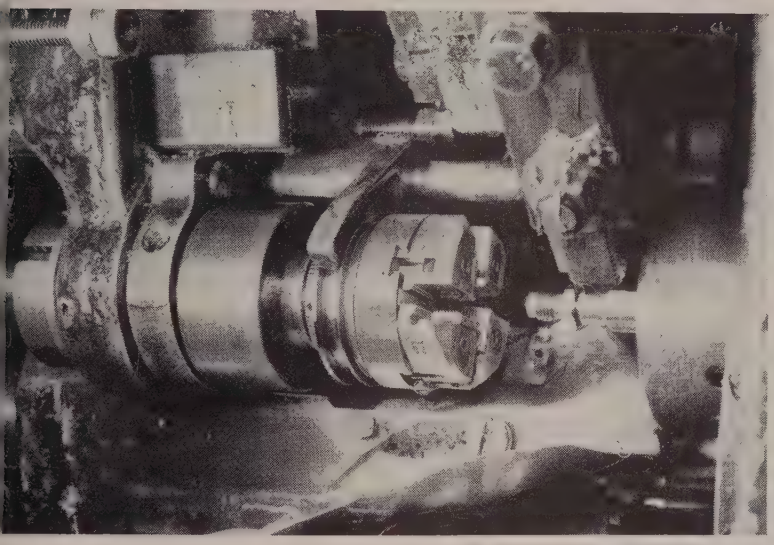
We note in the Technical Outlook column of June 6 (page 79) an item, "High Heat Rubber," which is of interest to us. Which General Electric plant makes it? We want more details, such as physical characteristics, the chemical make-up and its present applications.

J. R. Whitaker
Buyer
Warner Gear Division
Borg-Warner Corp.
Muncie, Ind.

• *Write Silicone Products Dept., General Electric Co., Waterford, N. Y.*



Economy Threading On Limited Clearance Automatics



This equipment displayed at:

THE MACHINE TOOL SHOW BOOTH 1406 MT

To assure economy threading on automatic screw machines where limited die head clearance is a major factor Frank H. Wilson Co., Inc. in Detroit, Michigan use the ½" LL LANDEX Head. Applied to one of their small Acme-Gridley's for threading tubing nuts this head cuts ½", 20 pitch UN threads ⅜" in length on B1113 screw stock to a class three fit. An average of 20,000 pieces are threaded between chaser grinds.

Compactly designed with only a 2 7/16" swing the ½" LANDEX will thread all diameters from #4 to ½". A minimum number of working parts made of hardened and ground alloy steel, chaser holders designed to eliminate warpage and springing, and the use of precision LANDIS Tangent Chasers . . . all contribute to the high degree of rigidity and accuracy of this LANDEX Head.

Compare the chaser lengths in the illustrations and note the long life this LANDIS User has received from the chasers used in this application. These chasers will still produce thousands of threads as (1) LANDIS Tangential Chasers are usable for 80% of their original length; (2) only a few thousandths of metal need be removed from a chaser when regrinding; (3) when regrinding the same amount of metal need not be removed from each chaser; (4) long chaser life is received between grinds. These are the basis for economy in any threading operation.

For further information on this LANDEX Head and on other LANDIS Heads using Tangential Chasers and designed for all types of thread-cutting operations write for Bulletins F-80 and F-90. Please send specifications when writing.

LANDIS *Machine* COMPANY

396 WAYNESBORO • PENNSYLVANIA • U. S. A.

GOOD HOUSEKEEPING MAY REQUIRE ADDITIONAL PLANT FACILITIES. Republic's Truscon Division can supply you with those facilities in a standard steel building. Illustrated is one of many types and sizes produced by the world's largest manufacturers of metal building products. Truscon steel buildings offer the economies of standardization—plus fire protection, ease and speed of erection, low upkeep, high investment value. They're low in cost and additions can be made easily and economically as space needs change.

REPUBLIC STEEL CORPORATION
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Company_____
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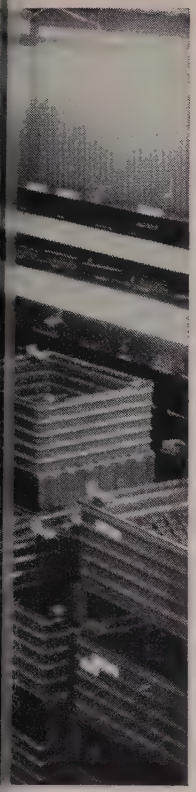
K-8678

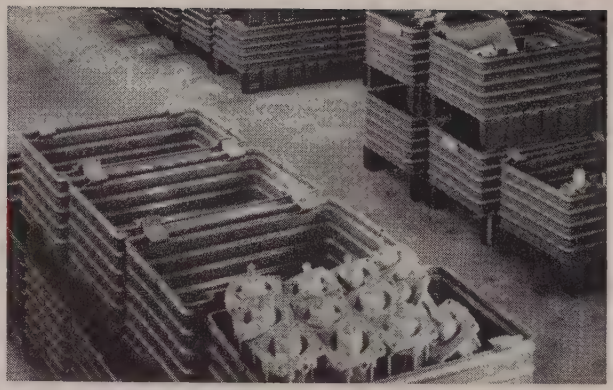
This is good

HOW REPUBLIC MATERIALS HANDLING

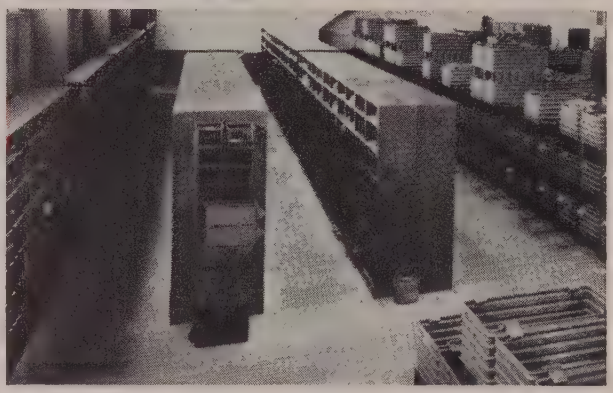
GOOD HOUSEKEEPING CAN ALSO BUILD GOOD EMPLOYEE RELATIONS. For example, modern steel lockers that conserve space and still provide clean, safe storage for employees' clothing and valuables are made by Republic's Berger Division. Illustrated is the Republic "Space-saver" two-person locker. It provides separate compartments for two people in no more floor area than that required for one large single-tier locker. Berger offers a complete locker planning, engineering and installation service.



PB-120-T BOX AND SKID UNITS used by Chiksan Company are equipped with welded tiering lugs which permit tiering to any practical height. Units are easily lifted and rapidly trucked to any point on the production line or in the warehouse.



WEDGE-LOCK STEEL SHELVING made by Republic's Berger Division assists Chiksan greatly in keeping more accurate records, uses less space and provides easy visible identification of parts. It is specifically designed for high stacking of enormous weights. Completely flexible, it assembles quickly and easily.



housekeeping . . .

EQUIPMENT SAVED SPACE AND REDUCED HANDLING COSTS 25%

The above photos were taken in the Brea, California, plant of the Chiksan Company, makers of ball-bearing swivel joints. They have been using Republic Materials Handling Equipment for about eighteen months for both raw and finished materials.

Here are the results in the words of the Manager of Production and Material Control:

"Our experience is that much less space is required for storage of raw forgings and castings—which allows for better housekeeping and reduces handling costs 25%.

Inventories are much simpler and more accurate. Substantial time saving is realized.

Finished products are stored in both stack-type steel boxes and steel shelving. They assist greatly in keeping more accurate records, use less storage space and provide visible identification. We are able to do a better job with one less employee in the warehouse and to do good housekeeping with less effort.

The installation of these products was a wise and profitable investment."

Chiksan should enjoy future benefits as well. Maintenance costs should be reduced because construction features of all Republic Materials Handling Equipment assure long, efficient service at lowest per-year cost.

The PB-120-T Box and Skid Units illustrated on these pages are only one of many types manufactured by Republic's Pressed Steel Division. There is a wide range of sizes from which to choose. Or if you have a special handling problem, Republic engineers are available to help you design a unit to meet your specific requirements. Your Republic Materials Handling Equipment Dealer has all the facts. Or write us for more information.

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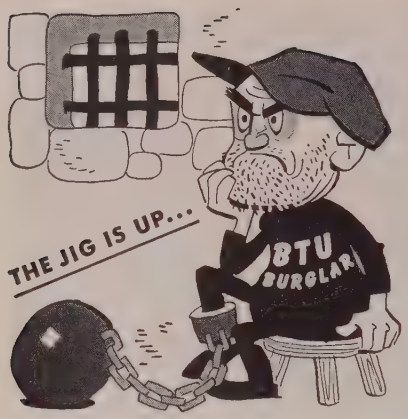
World's Widest Range of Standard Steels and Steel Products



and their fuel costs are DOWN...49%

Off to the pokey he goes. The BTU Burglar was caught red-handed stealing billions of BTU's of costly heat. But now that he's been arrested they're saving a cool 49% on fuel.

This forge furnace—which is cited because it's a typical example—had always had heavy firebrick as a lining. But the last time relining was necessary, it was decided to try *lightweight* B&W Insulating Firebrick. Result: Annual fuel cost went down 49%—a saving of $4,800, and this, mind you, was in just one furnace.

Heavy furnace linings waste your fuel dollars two ways: They soak up and hold large quantities of heat which are lost when the furnace is cooled; and they conduct and lose too much heat through the walls. Lightweight insulating firebrick, containing millions of tiny air cells, heat up and cool quickly, absorbing and storing very little heat. Also, they resist heat flow, keeping it inside the furnace to do productive work.

The lighter the brick (and the lightest of all are B&W Insulating Firebrick), the more you save on fuel.

What easier way could there be to cut a major cost? You and those responsible for furnace operations in your plant will find it well worth while to talk it over with the local B&W Refractories Engineer. Or, write to B&W today for further information.

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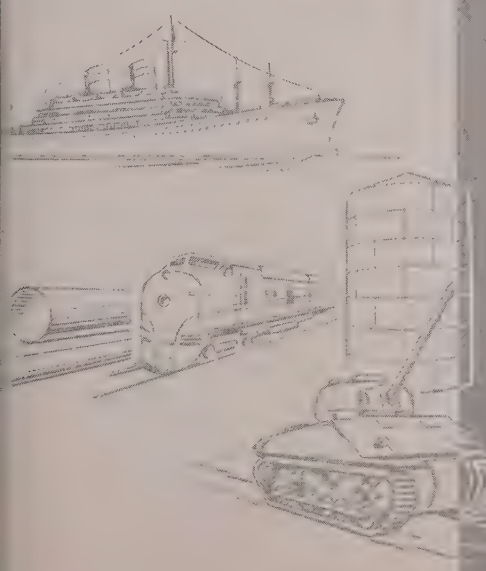
120 inch Plate Mill



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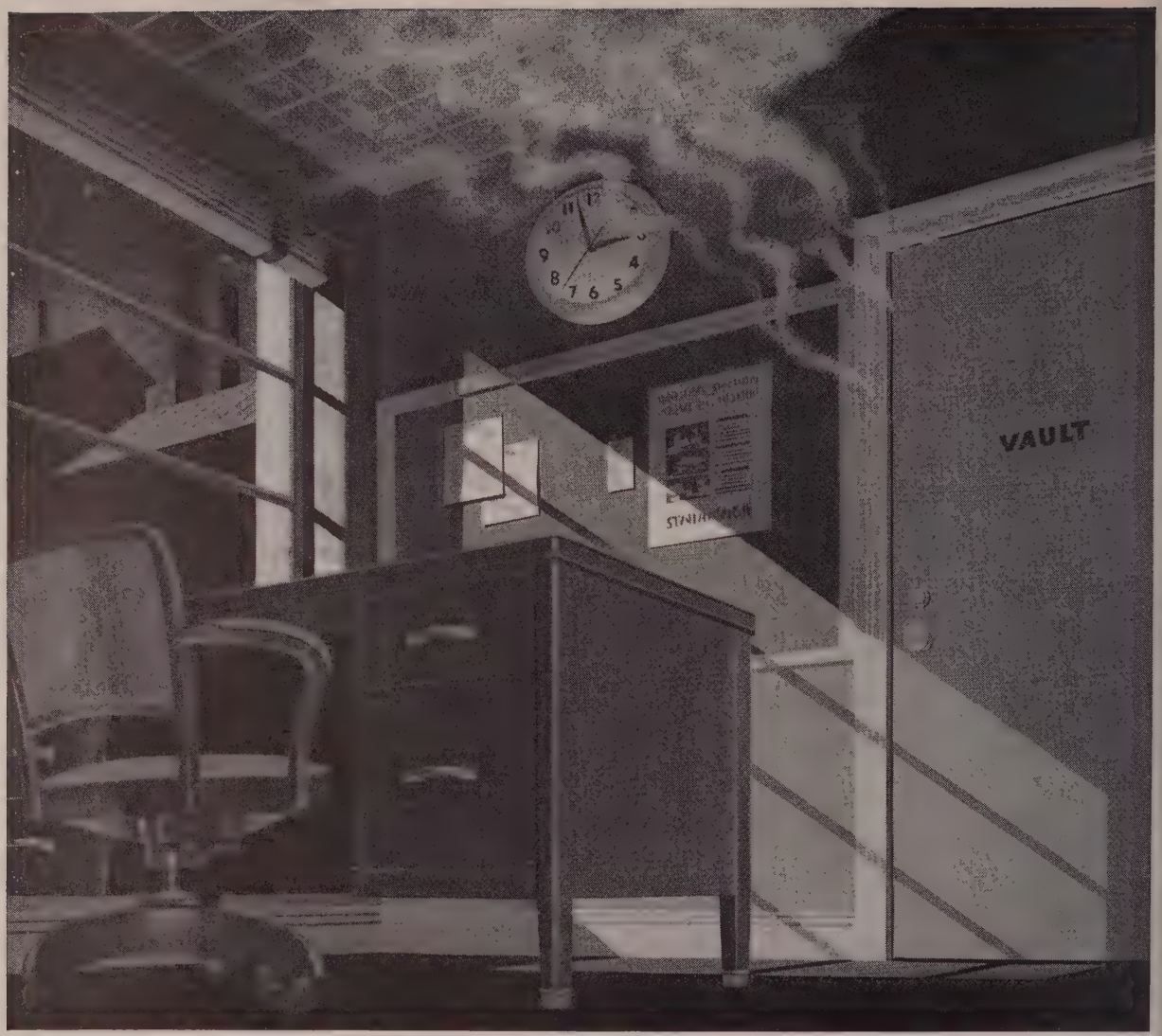

WHAT HAPPENS NEXT?

If management has been wise, a fire tragedy will be stopped before it starts...if not, in 20 minutes extensive destruction and total loss could readily be the result.

First-rate fire protection is essential to the continued success of any business. With C-O-TWO Smoke or Heat Fire Detecting Systems, plus C-O-TWO High Pressure or Low Pressure Carbon Dioxide Type Fire Extinguishing Systems, as well as PYRENE Air Foam Type Fire Extinguishing Systems for specific outdoor locations, your plant can have fast, positive round-the-clock fire watchman service simultaneously at each fire hazard point . . . a fire tragedy is stopped before it starts.

Furthermore, there is a personal sense of responsibility inherent with PYRENE—C-O-TWO Fire Protection Engineers that assures you of fully adequate firesafety . . . a definite plus in your behalf. Whether it's fire detecting or fire extinguishing . . . portables or built-in systems . . . PYRENE—C-O-TWO means top quality backed by experienced engineering that results in operating superiority for you at all times.

Act now . . . don't take unnecessary chances with your investment any longer . . . the extensive experience of PYRENE—C-O-TWO over the years is at your disposal without obligation. Remember . . . a plant-wide fire protection survey skillfully executed today could be the means for greater profits tomorrow.

Pyrene

PYRENE — C-O-TWO

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Sales and Service in the Principal Cities of United States and Canada

C-O-TWO

COMPLETE FIRE PROTECTION

portable fire extinguishers . . . built-in fire detecting and fire extinguishing systems

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SCANNED
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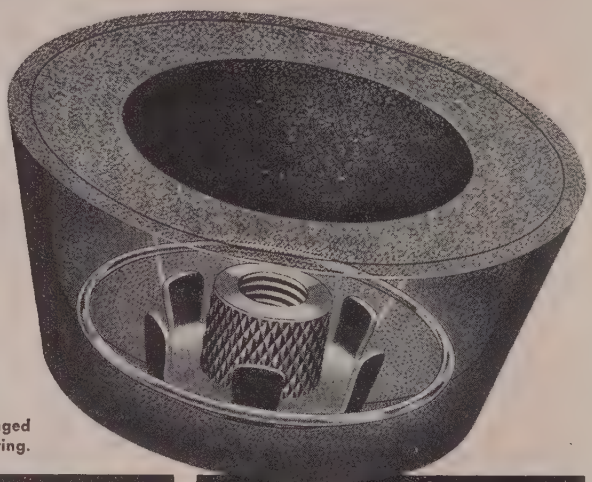
Today's new lightweight portable grinders need this kind of wheel!

The new lightweight

U. S. ROYALITE

HARD SHELL CUP WHEEL



"X-ray" view of wheel shows pronged anchor bushing and safety ring.

Here a worker uses a lightweight grinder with a U. S. Royalite Hard Shell Cup Wheel, to remove weld butt and to clean up welded structural steel member.

Removing weld flash from fabricated steel component for atomic reactor. Careful dressing of weld flash was required to obtain smooth surface for joining with other components.

Contour grinding (to template) for smooth surface joint between components for atomic reactor. Component is of fabricated steel.

This great wheel is powerfully reinforced by a pronged anchor bushing and safety ring assuring a safer and smoother-running cup.

The U. S. Royalite® Wheel is "job-geared" for these modern lightweight portable grinders. Royalite's free cutting face has a tougher rim, which keeps the edge sharp for the full life of the wheel.

EXTRA DIVIDEND: Remember that when you buy wheels from a United States Rubber Company salesman you are dealing *direct* and are being served by a specialist—a man whose only job is selling and *servicing* abrasive wheels. He will see that you get maximum value out of your abrasive wheel dollars.

• • •

The combination of the *lightweight* grinder and the *safer*, smooth-running U. S. Royalite Wheel means a better job in less time—with less worker fatigue.

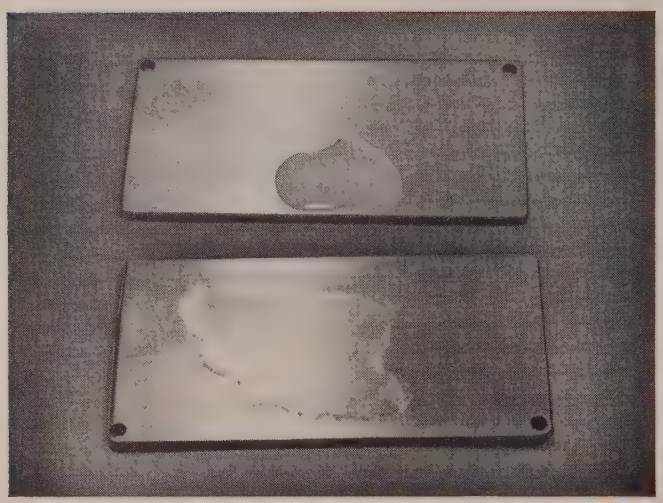
"U. S." Research perfects it..."U. S." Production builds it...U. S. Industry depends on it.

UNITED STATES RUBBER COMPANY

MECHANICAL GOODS DIVISION · ROCKEFELLER CENTER, NEW YORK 20, N. Y.

Hose • Belting • Expansion Joints • Rubber-to-metal Products • Oil Field Specialties • Plastic Pipe and Fittings • Grinding Wheels • Packings • Tapes
Molded and Extruded Rubber and Plastic Products • Protective Linings and Coatings • Conductive Rubber • Adhesives • Roll Coverings • Mats and Matting

Announcing
SHELL
DROMUS OIL E



Above: Cooling action of a cutting fluid is directly related to its wetting ability. Conventional soluble oil emulsion (background) "balls" up. Equal amount of Shell Dromus Oil E spreads out thinly . . . wets far greater area.

Right: Plain carbon steel, if left in water at room temperature for about two hours, will rust as shown. Sample on left was in a 1-30 solution of Shell Dromus Oil E and water *for six months without rusting.*

SHELL DROMUS OIL E

SCANNED
steel_1955-07-11_137_2
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51 of 70

NEW CUTTING OIL

permits higher speeds and faster feeds than ever maintained before

Shell Dromus Oil E, a new solution-type fluid, wets all metal surfaces with extreme rapidity and keeps both work and tools exceptionally cool. These qualities permit an increase of machine speeds and/or feeds far beyond anything allowable with conventional soluble oils.

IT'S MUCH EASIER ON TOOLS

There's much more life in any cutter or abrasive wheel when protected by this new oil. *It stays put* between tool and work. (At a 1-30 dilution, average tool life increase in extended field tests was about 50%.)

IT SETTLES OUT FAST

Chips and wheel particles settle out immediately . . . the recirculated fluid is clean and free from contaminating particles. It is *not* sticky or greasy . . . leaves no deposits on machines or work.

IT FIGHTS RUST

Shell Dromus Oil E is readily soluble in hot, cold, soft or hard water, and stable in any concentration. Even at low concentrations, it gives excellent rust protection to all ferrous metals, *including cast iron.*

IT'S GREAT FOR GRINDING

Grinding wheels remain clean, *even when material retains a film of cutting oil from a previous operation.* Even cast iron can be ground cleanly when Shell Dromus Oil E is used to cool the work.

IT KEEPS WORK COOL

Even at stepped-up production rates, you'll find less heating and better finish wherever this new oil is used.

If all this reads "too good to be true," we suggest that you try Shell Dromus Oil E *on any problem operation you have.* It *is* that good!

SHELL OIL COMPANY

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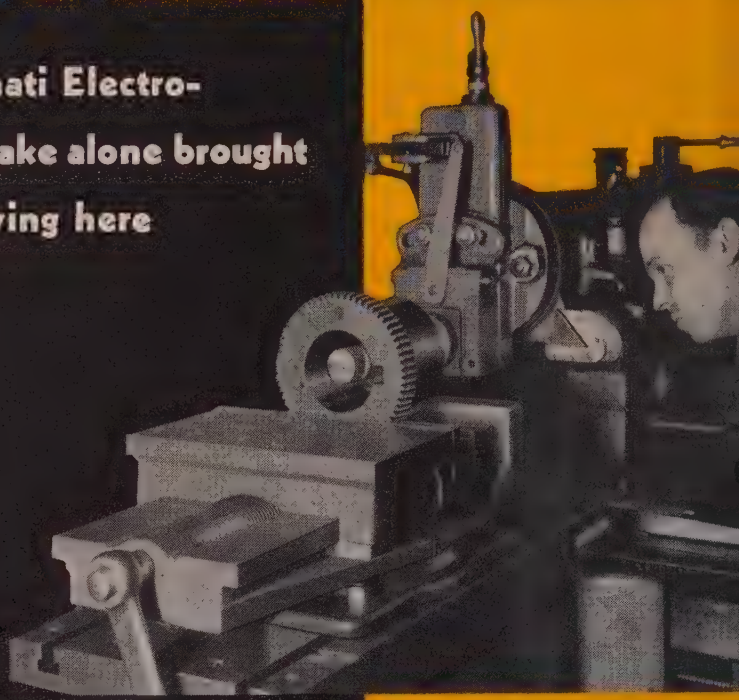
100 Bush Street, San Francisco 6, California

SHELL

Outstanding Time Saver...

The New Cincinnati Electro-Magnetic Clutch and Brake alone brought a 30% time-saving here



The New Cincinnati Magnetic Clutch and Brake, with its single, convenient control lever, gives the operator the fastest, simplest and most accurate control of his Shaper and converts waste time into productive time.

This powerful clutch and brake requires no adjustment, and has a long, maintenance-free life.

Write for Cincinnati Shaper Catalog N-6.

Shaping time on 7 internal oil grooves in these steel sleeves was reduced from 12.5 minutes to 8 minutes, by the Cincinnati Electro-Magnetic Clutch and Brake.

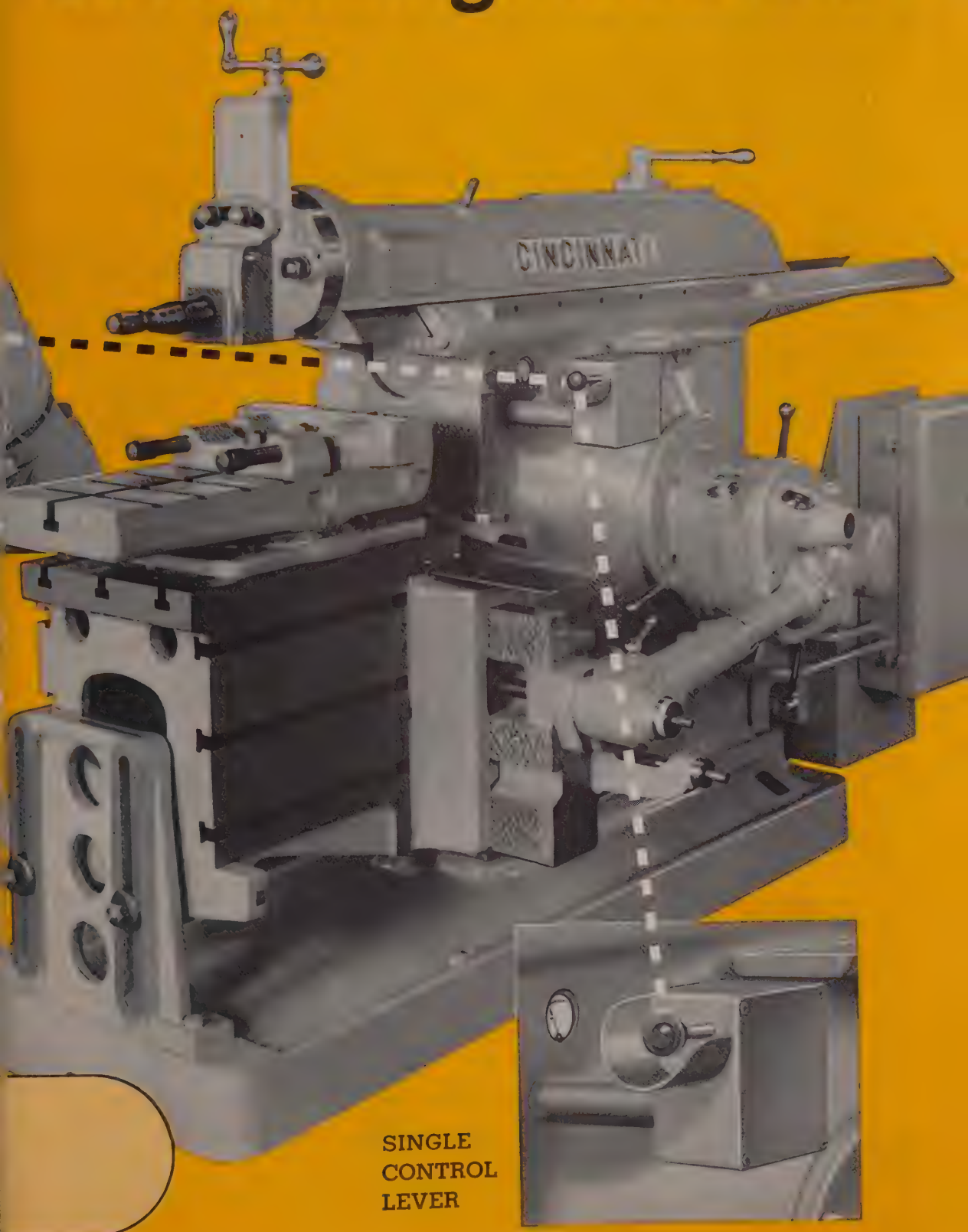
SEE
CINCINNATI
SHAPERS, SHEARS,
PRESS BRAKES
BOOTH 1105

CINCINNATI

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A. SHAPERS • SHEARS • BRAKES

.Outstanding ACCURACY



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CONTROL
LEVER

In Chicago...
you'll see for the first time

A NEW LINE OF GISHOLT MACHINES

identified by this medallion:

The new Gisholt MASTERLINE medallion identifies this new and improved series of machines—and re-emphasizes Gisholt achievements in building the master tools of industry since 1887.

Based upon nearly 70 years of specialized experience, the new Gisholt MASTERLINE machines are ready to give you production far in advance of their time.

Come in and inspect them at close range. Watch them operate. Learn what these new Gisholts can do to cut costs on your work.

Be sure to visit the Gisholt exhibit—Booth 1413, Exhibition Hall.

GISHOLT
MACHINE COMPANY

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES

CALENDAR
OF MEETINGS

ly 12-14, Western Plant Maintenance Show: Pan-Pacific Auditorium, Los Angeles. Information: Clapp & Poliak Inc., 759 Monadnock Bldg., San Francisco 5, Calif.

ly 21-23, Truck-Trailer Manufacturers Association Inc.: Summer meeting, Sheraton-Cadillac hotel, Detroit. Association's address: 710 Albee Bldg., Washington 5, D. C. Managing director: John B. Hulse.

ug. 15-17, Society of Automotive Engineers Inc.: West coast meeting, Multnomah hotel, Portland, Oreg. Society's address: 29 W. 39th St., New York 18, N. Y. Secretary: John A. C. Warner.

ug. 22-23, Stanford Research Institute and National Industrial Conference Board: Symposium on electronics in automatic production, Sheraton-Palace hotel, San Francisco. Information: National Industrial Conference Board, 247 Park Ave., New York 17, N. Y. Secretary: Herbert Briggs.

ug. 24-26, West Coast Electronic Manufacturers Association: Western electronic show and convention, Civic Auditorium, San Francisco. Information: WESCON, 344 N. LeBrea Ave., Los Angeles 36, Calif.

ug. 28-Sept. 1, National Association of Furniture Manufacturers: Furniture supply fair, Conrad Hilton hotel, Chicago. Association's address: 666 Lake Shore Dr., Chicago 11, Ill. Secretary: John M. Snow.

ug. 31-Sept. 26, World's Fair of Power: S. Lake Shore Dr. adjacent to Soldiers Field, Chicago. Sponsor: General Motors Corp., General Motors Bldg., Detroit 2, Mich.

ept. 5-6, American Machine Tool Distributors Association: Annual meeting and show, Blackstone hotel, Chicago. Association's address: 1900 Arch St., Philadelphia, Pa. Secretary: Thomas A. Fernley Jr.

ept. 6-8, Industrial Truck Association: Fall meeting, the Greenbrier, White Sulphur Springs, W. Va. Association's address: 526 Washington Loan & Trust Bldg., Washington 4, D. C. Managing director: William Van C. Brandt.

ept. 6-8, Material Handling Institute Inc.: Fall meeting, the Greenbrier, White Sulphur Springs, W. Va. Institute's address: One Gateway Center, Pittsburgh 22, Pa. Managing director: R. Kennedy Hanson.

ept. 6-17, Metalworking Machinery & Equipment Exposition: Coliseum, Chicago. Information: Exhibition & Convention Management Inc., 2689 E. Overlook Rd., Cleveland 6, O. General Manager: C. L. Wells.

ept. 6-17, National Machine Tool Show: International Amphitheatre, Chicago. Sponsor: National Machine Tool Builders Association, 2071 E. 102nd St., Cleveland 6, O. General Manager: Tell Berna.

ept. 6-17, Production Engineering Show: Navy Pier, Chicago. Sponsor: National Machine Tool Builders' Association, 2071 E. 102nd St., Cleveland 6, O. General Manager: Tell Berna.

ept. 9-11, Metal Powder Association: Fall closed meeting, the Homestead, Hot Springs, Va. Association's address: 420 Lexington Ave., New York 17, N. Y. Secretary: Robert L. Ziegfeld.

ept. 11-14, National Metal Trades Association: Eastern plant management conference, Essex and Sussex hotels, Spring Lake, N. J. Association's address: 122 S. Michigan Ave., Chicago 3, Ill. Secretary: Charles L. Blatchford.

ept. 11-16, American Chemical Society: Fall meeting, University of Minnesota, Minneapolis. Society's address: 1155 16th St. N.W., Washington 6, D. C. Executive secretary: Alden H. Emery.

ept. 12-14, American Road Builders Association: Annual conference of county engineers and officials, New Riverside hotel, Gatlinburg, Tenn. Association's address: World Center Bldg., Washington 6, D. C. Secretary: Eugene Reybold.

ept. 12-14, Allied Railway Supply Association: Annual meeting and exhibit, Sherman hotel, Chicago. Association's address: P.O. Box 5522, Chicago, Ill. Secretary: Charles F. Weil.

Look Overhead . . . see "NORTHERN"

For heavy, continuous service in steel storage yards

The 40-ton, 75-foot span, heavy duty crane shown above is typical of many similar NORTHERN CRANE installations in steel mills, fabricating plants, and similar plants in heavy industry.

NORTHERN mill type cranes are designed and built to meet the most exacting requirements, providing for continuous service, maximum loads, and high impact allowances. Mill type motors and control equipment provide highest electrical performance.

NORTHERN CRANES are the result of over 55 years' experience in the design of overhead electric traveling cranes, heavy duty electric hoists and other materials handling equipment.

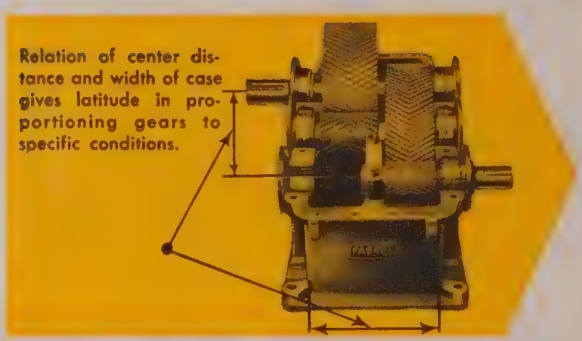
Let us send you our latest bulletins

NORTHERN | MATERIALS HANDLING EQUIPMENT

NORTHERN ENGINEERING WORKS
210 CHENE ST., DETROIT 7, MICH.

3 BIG REASONS

WHY IT PAYS TO SEE FARREL® WITH YOUR SPEED REDUCTION PROBLEM

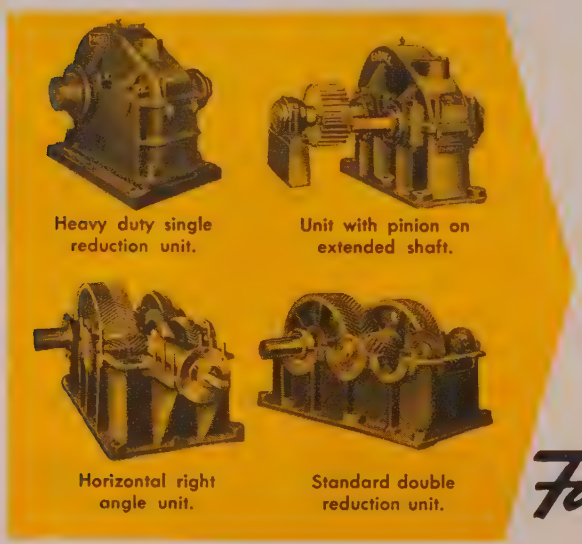


1 DESIGN FLEXIBILITY

You can ask for—and get—a Farrel speed reducing unit that will fit your requirements exactly. Gears and pinions can be proportioned to meet specific load, speed and service requirements. Input and output shafts can be varied in size, in material and in extension. Housing dimensions can even be changed to meet problems in mounting.

2 PRECISION GEARS

Precision generation by the famous Farrel-Sykes method assures accuracy of tooth spacing, tooth contour and helix angle, which pay off in smooth, quiet, uniform power flow. The herringbone design provides evenly distributed pressure over each tooth, from tip to working depth line. This reduces wear and maintains correct tooth action throughout a long gear life.


Heavy duty single reduction unit.
Unit with pinion on extended shaft.
Horizontal right angle unit.
Standard double reduction unit.

3 WIDE RANGE OF RATIOS AND CAPACITIES

Designs include single, double and multiple reduction units, speed-change units having two or more selective speeds, and drives to meet special requirements. Ratios of single reduction units range from 1½:1 to 10:1. Double reduction units are available in a ratio range from 10:1 to 60:1.

For more about these adaptable units write for Bulletin 449.

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ANSONIA, CONNECTICUT
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Sales Offices: Ansonia, Buffalo, New York, Boston, Akron, Detroit, Chicago, Memphis, Minneapolis, Fayetteville (N.C.), Los Angeles, Salt Lake City, Tulsa, Houston, New Orleans

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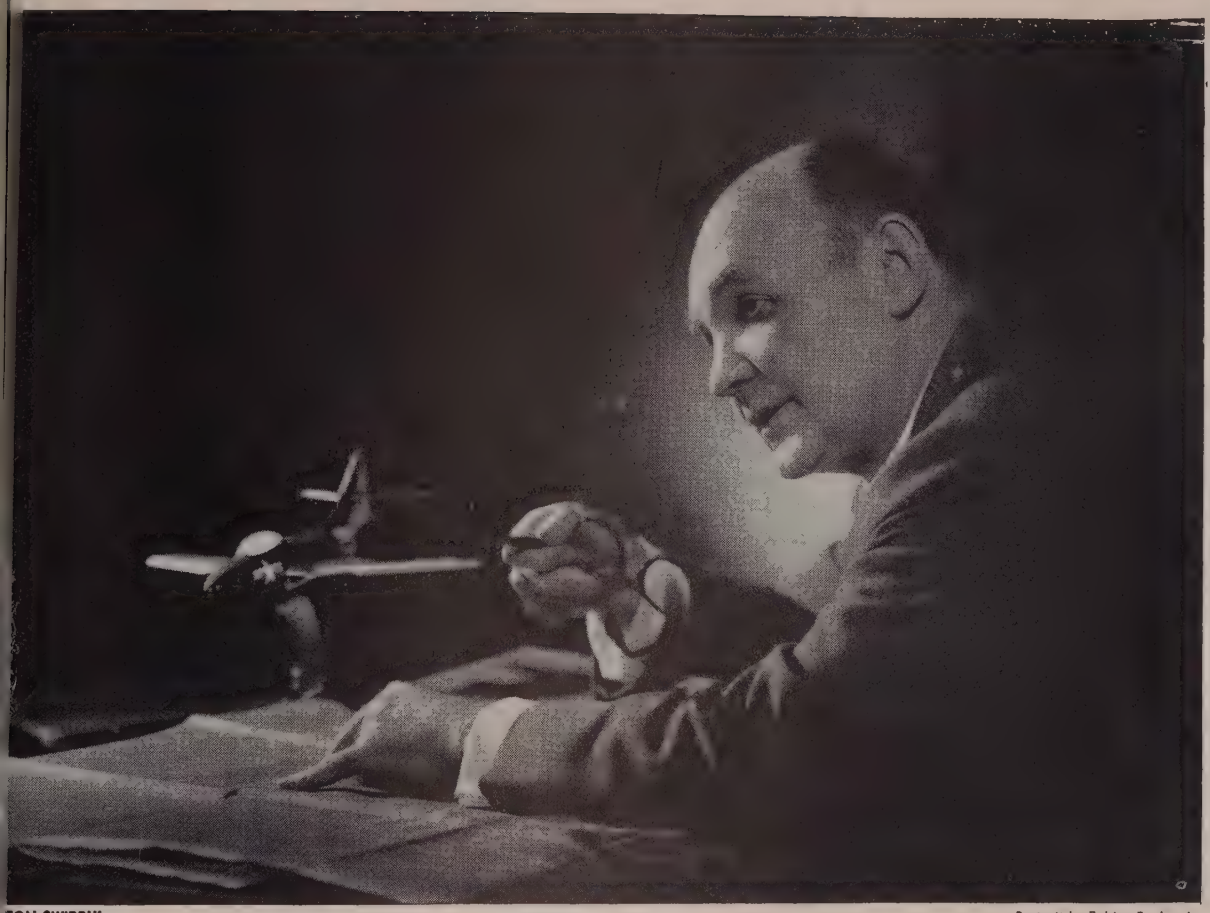


EON SWIRBUL

Portrait by Fabian Bachrach

"...over 10,000 employees joined the Payroll Savings Plan..."

'At Grumman, we are proud that in our person-to-person campaign over 10,000 employees joined the Payroll Savings Plan and grasped the opportunity to buy U. S. Savings Bonds regularly every payday. These results were achieved through enthusiastic, patriotic teamwork. I urge every American company to reactivate their Bond Program now in a nationwide effort to maintain sound money and a stable economy."

LEON SWIRBUL, ***President, Grumman Aircraft Engineering Company***

If you have a hundred or more men and women, you can make a substantial contribution to sound money and a stable economy, and also help your employees to build personal security, by installing the Payroll Savings Plan, or reactivating an existing one.

A phone call, wire or letter to Savings Bonds Division, U. S. Treasury Department, Washington, D. C., will bring prompt response from your State Director, who will help you to organize a person-to-person canvass that will put a Payroll Savings Application in the hands of every employee. That's all you have to do. Your employees will *grasp* "the opportunity to buy U. S. Savings Bonds regularly every payday."

The United States Government does not pay for this advertising. The Treasury Department thanks, for their patriotic donation, the Advertising Council and

STEEL
The Metalworking Weekly

PUBLIC SERVICE ADVERTISING COUNCIL

MACHINING COSTS
CUT 40%

...ON JET RINGS

By switching to flash butt-welding of extruded sections, we helped one customer cut fabricating costs of a jet engine ring from $67.85 to $41.93. A saving of $25.92 per ring — roughly 40%.

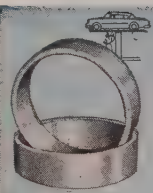
This is one of many cases in our files where rolling and flash butt-welding of bars, sections, extrusions or plate has proven to be the most economical and practical method of fabricating circular components. Shown below are some other "American Welded" components.

If you require a similar part, it is very likely that this type of fabricating can cut your costs. Why not write our Product Development Division today? They will be glad to study your problem.

THE AMERICAN WELDING & MANUFACTURING COMPANY
110 DIETZ ROAD • WARREN, OHIO

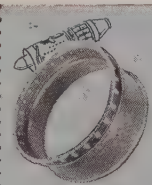
AMERICAN WELDING

WELDING • MACHINING • FABRICATING



MACHINED RINGS
Rolled and flash-welded rings, machined to exact specifications and delivered ready for assembly.

WHEEL AND RIM ASSEMBLIES
Weldment of carbon steel bar and plate for use on heavy earth-moving equipment.



TURBINE FRAME ASSEMBLIES
Formed sheet metal bands and flash butt-welded rings fabricated into a jet engine component.

NOZZLE BOXES
Complicated welded assemblies of machined rings and sheet metal.

COMPRESSOR CASES
Welded band for hermetically sealed refrigerator compressor.

SPECIAL MILL ROLLED SECTIONS
Amweld can show you how to save critical material and valuable machinery time by use of these sections.

MOTOR FRAMES
Steel bars and plate formed and welded into industrial motor frames.

Send for free catalog of American Welding Production Facilities.

Metalworking Outlook

Aircraft Output Slips

The aircraft industry expects to turn out about 12,000 planes this year, 8500 of which will be military. Last year it produced nearly 13,000 aircraft, 9600 of which were military. The output in 1953 was 15,000 units, 11,000 being military. Aircraft Industries Association's Adm. Dewitt C. Ramsey predicts: "Production will continue to decline toward maintenance levels. Our employment has dropped below 800,000, second to the automotive industry." Preliminary returns to an AIA questionnaire indicate: Major producers are placing almost half their contract dollars with other manufacturers. Of the money spent with outside firms, about half goes to firms employing 500 or less.

Coming: More AF Tool Orders

Watch for the Air Force to award by September contracts totaling about $50 million for long lead time machine tools. An additional $23 million in contracts will be let by the end of the year. Late last month the Air Force awarded the first three contracts, for $11 million, in the total $84-million procurement. Requests for bids have been sent out to manufacturers for more than 80 per cent of the program.

Navy To Re-Equip

In fiscal 1957 the Bureau of Ships plans to start a five-year program of equipment replacement at 11 naval shipyards and one repair facility. It has a new formula to determine replacement, based on the assumption that operations will be on a 2½-shift basis under mobilization conditions. Most Bureau of Ships equipment is 11 to 15 years old.

Defense Buying Agency?

The Hoover Commission wants the Defense department to have a Defense Supply & Service Administration to handle procurement and distribution of common items and services for the three military departments. Needed would be an act of Congress to create the new agency. Five members of the commission, four of whom are members of Congress, either dissent from the proposal or reserve the right to change their minds.

Steel Product Mix Changes

A Bethlehem Steel Co. report indicates how dramatically the whole steel industry has changed its product mix in only ten years. The emphasis has shifted to more and more sheet strip production (Bethlehem's capacity is up 187 per cent) and tin and black plate output (its potential increased 106 per cent). The capacity to produce rails and rail accessories has declined. Bethlehem has spent $1 billion since 1946 to boost its capacity for finished prod-

ucts by 55 per cent. It has requests pending for fast tax amortization on additional projects to cost $108.2 million (page 35).

AEC Power Ruling Due

Look for the Atomic Energy Commission to act soon on proposals by four groups of companies to build atomic power reactors with federal aid. The groups are: Consumers Public Power District, Columbus, Nebr.; Yankee Atomic Electric Power Co., Boston; Nuclear Power Group, Chicago; and companies in the Detroit area headed by Detroit Edison Co. The groups have offered to put up some 90 per cent of the cost—$150 million—if the government will supply the balance. Reactors planned would provide 455,000 kw of capacity.

Atom Power by 1980

Sylvania Electric Products Inc. predicts that 25 years from now more than half the power plants then building will be nuclear powered. By 1980, the company says, 17 per cent of the generating capacity will be nuclear powered, representing a probable investment of $14 billion. By 1975, the value of atomic fuel production and related activities will exceed $500 million a year. Sylvania believes that atomic fuel producers will be to the atomic power industry of the future what the coal and oil producers are to utilities today.

Electronics Eclipses Records

Sylvania calls electronics a $9-billion industry, counting television, radio, commercial and military electronics, broadcasting and related segments. It predicts its sales will climb to $15 billion within four or five years and to $20 billion by 1965. Currently producing at a $16-billion annual rate, the combined electrical-electronics industry would be in the $30-billion category by 1965.

More Area Development

Political and business leaders are stepping up efforts to broaden the industrial scope of their areas. Westinghouse Electric Corp.'s president, Gwilym A. Price, will be chairman of a new Regional Industrial Development Corp. to develop, expand and diversify industry in and around Pittsburgh. West Virginia's governor, William C. Marland, is on a coast-to-coast personal selling tour, aimed at attracting new industry to his state.

Straws in the Wind

The present Defense Production Act has been extended until July 31 to allow Congress more time to consider the two-year extension . . . The Atomic Energy Commission has issued a proposed regulation setting up procedures for issuing licenses to private operators of production and utilization facilities . . . United Auto Worker and United Electrical worker locals have ratifield the Ford and GM pacts negotiated by the CIO unions.

Let's take a

new look

at quality control

One of the great ideas in steel supply has been taking on new meaning at Ryerson lately—and it will be worth your while to learn about it.

Twenty years ago, the Ryerson plan for Certified Steel was big news because it set standards of quality unequalled in steel from stock at that time. But during the postwar period of great demand, emphasis on quality necessarily gave way a little to emphasis on quantity until additional capacity could be built.

Today, however, there's no compromise! A committee of top Ryerson executives has instituted a sweeping new program of checks and counter-checks. Specifications have been rewritten; inspection techniques tightened; so that today *Certified Steel* means more than ever before. For example, it means that:

— every kind of steel in Ryerson stocks—carbon steel, alloy steel and stainless—is produced to definite specifications for high uniform quality.

— you are protected against the possibility of mixed steels by our spark testing of carbon steel plates and special quality bars, structurals, alloys and stainless bars and plates.

— the specific heat analysis is available for all Ryerson plate steel, special quality carbon bar steel, alloy steel and stainless steel because all are identified by heat number and every heat analysis is kept on file.

— you can use Ryerson alloy steel with complete confidence because a practical 8-step quality-control plan assures dependable performance and guides heat treatment.

— on *all* Ryerson Certified Steels we are able to furnish a certificate of analysis.

Certified Steel means all these things and many more. Its essence is a devotion to quality that has an increasing dollars-and-cents importance to you. The world's largest steel stocks are also the world's finest—backed by over a century of reliability in product and service. Today, more than ever before, you can depend on Ryerson as your best source for the steel you need, when you need it.

RYERSON STEEL

In stock: Carbon, alloy and stainless steel . . . bars, structurals, plates, sheets, tubing, reinforcing bars, machinery & tools, etc.

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RELIANCE
Job-Fitted
PRODUCTS

COLD ROLLED STRIP STEEL
Coils • Cut Lengths • All Tempers

SHEETS
Cold Rolled • Hot Rolled • H.R. Pickled
Galvanized • Long Terne
Standard or Production Sizes
Sheared or Slit to Actual Working Dimensions

How a condenser maker wants *his* DSC STRIP and gets it . . .
. . . as you can, too

***His* specifications**
THICKNESS: .0105" ± .0005"
(closer-than-standard by 50%)
TEMPER and FINISH: Dead Soft with just enough skin pass to produce a light, satiny surface

•

Each of these "specs" is important in itself. But it's the way they work in combination that makes the job. Here's why·

The strip is rolled 20¼" wide and slit into various widths. It is fed automatically through close-fitting progressive dies of intricate design. Press speed is close to 300 strokes a minute. You can see how even slight variations in thickness and/or temper might cause the strip to jam-up, risking serious damage to expensive tools besides disrupting production. Undue gauge variation might also cause dimensional build-up and hamper the tight assembly operations.

Surface quality is extremely important . . . not "for looks" but for function. In this case, the success of an ingenious hydrogen copper brazing process depends on it.

DSC Strip is giving this customer what he wants. How about trying some yourself? We'll welcome the chance to work with you, too.

Customer Satisfaction Is Our No. 1 Job

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GENERAL SALES OFFICE—DETROIT 9, MICHIGAN

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Cold Rolled Carbon Steel Strip — Flat Cold Rolled Carbon Spring Steel
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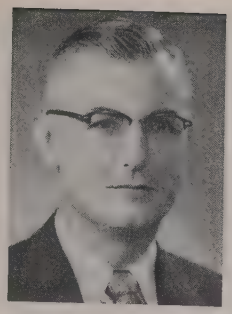


This Changing Industry

This week, 31 metalworking companies will go out of business. But 50 new plants will start operations.

New products will be introduced by 125 plants, and 150 companies will change name, ownership or address.

And 850 metalworking executives will move into new positions and functions.

The figures, of course, are averages. They represent what has been happening at a fairly constant rate over the last two years.

Metalworking companies are like people. One dies, two are born, others keep growing up. That's because companies are people.

Constant change is as old as industry itself. Yet the reminder is always surprising.

At a metalworking convention a few weeks ago, we were talking to a retired executive. He had been a moving influence in the association for many years. In 1950, he sold his interest in his company and ceased to attend association meetings. This year he returned, just to see some of his old friends. New blood was running the association. Faces were not familiar. Old friends were missing. Our retired executive was as forlorn as the old grad who after 30 years returns to a college homecoming.

Another friend, a salesman for industrial rubber products, called on a major refrigerator maker for several years. He finally convinced its buyer that his line was just what the company needed. Two months later the buyer moved up, and our salesman had to start all over again.

Such change can be annoying. But it represents a constant challenge and opportunity that thrills the ambitious young businessman.

No product ever is firmly established in its market. There always is the opportunity for a better product to replace it.

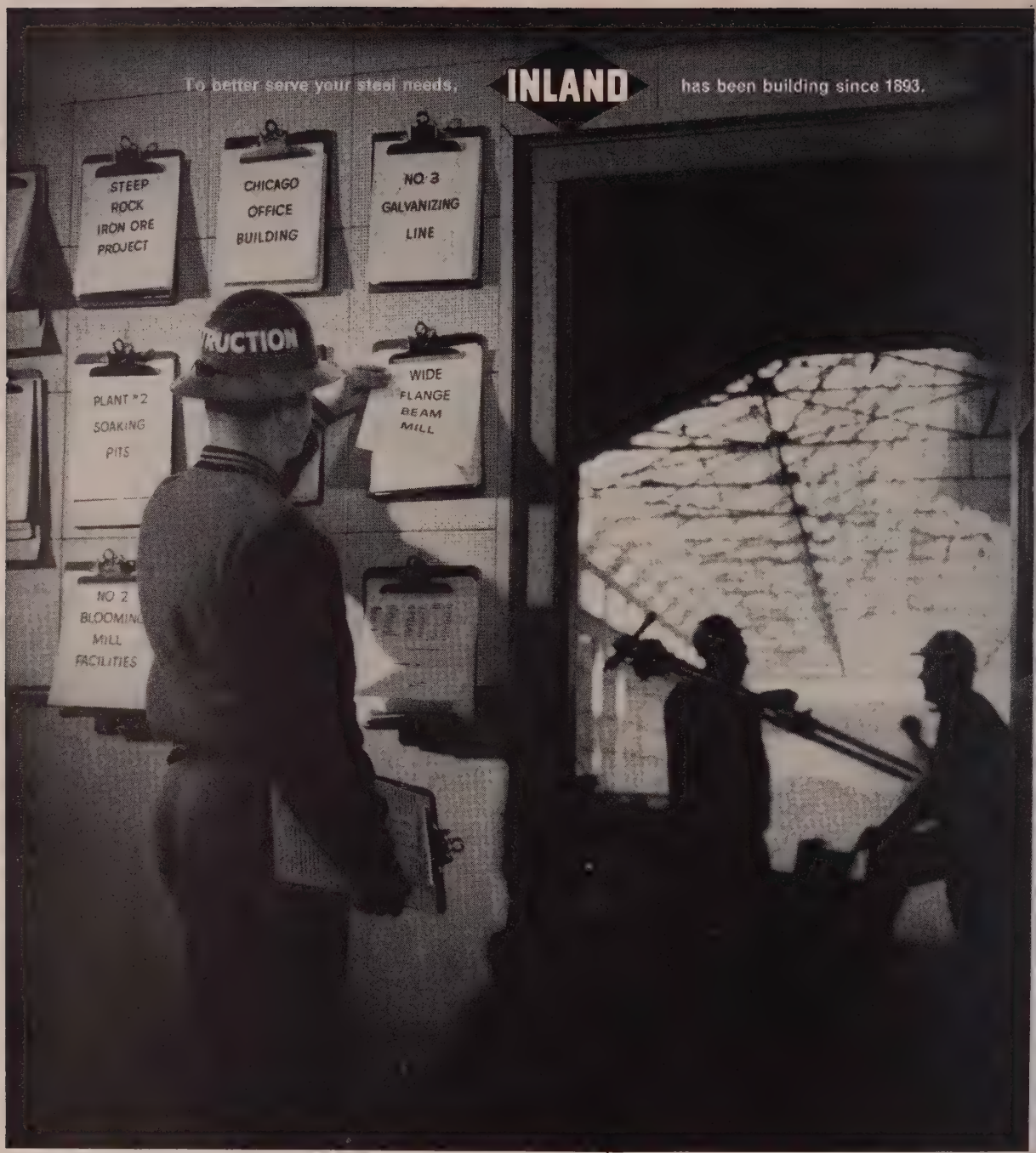
No account ever is completely sold. A rival always has the chance to get it.

No person ever is stuck in his job. There always are openings calling for men of competence.

Thank heavens, we are a part of this changing industry.

Walter J. Campbell

MANAGING EDITOR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INLAND
has been building since 1893.
STEEP ROCK IRON ORE PROJECT
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NO. 3 GALVANIZING LINE
PLANT #2 SOAKING PITS
WIDE FLANGE BEAM MILL
NO. 2 BLOOMING MILL FACILITIES

WHY INLAND WILL INVEST $35,000,000 IN YOUR FUTURE IN 1955

Banking on the ability of Midwestern industry to create new and improved products in ever greater volume, to satisfy the demand of the American people for a higher standard of living, Inland keeps pace with new and improved plants, processes and facilities to better serve their customers with quality steel . . . when, where and how they want it.

INLAND STEEL COMPANY
38 South Dearborn Street • Chicago 3, Illinois

Sales Offices: Chicago • Milwaukee • St. Paul Davenport • St. Louis • Kansas City • Indianapolis Detroit • New York

Principal Products: Sheets • Strip • Structural Shapes • Plates • Bars • Tin Mill Products • Rails and Track Accessories • Coal Chemicals

A Peek at Steel Expansion Plans

COMPANY	HOME OFFICE	PLANNED EXPANSION
United States Steel Corp.	Pittsburgh	$595,274,900
Bethlehem Steel Co.	Bethlehem, Pa.	108,169,000
Youngstown Sheet & Tube Co.	Youngstown	101,962,000
Jones & Laughlin Steel Corp.	Pittsburgh	83,702,394
Republic Steel Corp.	Cleveland	36,395,000
Inland Steel Co.	Chicago	4,652,600
Connors Steel Division H. K. Porter Company Inc.	Birmingham	2,007,883
Ohio Ferro-Alloys Corp.	Canton, O.	985,000
A. Finkl & Sons Co.	Chicago	335,956
Colorado Fuel & Iron Corp.	Denver	326,053
Western Empire Steel Corp.	Oakley, Calif.	131,000,000

An influx of requests for fast tax write-offs means . . .

Steelmen Set To Boost Capacity

THE STEEL INDUSTRY has charted at least another billion dollars worth of improvements and expansions.

This is indicated by applications filed with the Office of Defense Mobilization, Washington, for accelerated tax amortization.

Speed-Up—In the last month, filing has speeded up. The stimulant has been the near-capacity rate of steel production.

Applications have been filed even though the government can take no action on them now. Action must await a government steel expansion goal—based on mobilization needs as determined by ODM. The last goal was attained some time ago.

Getting Set — Steel companies want to be in line for consideration if a new goal is set. Since Jan. 1, steel producers have filed some 70 applications. One-third of them came in June. Value of the 70 projects (11 companies are involved) is $1,064,810,786 (see table).

Nearly all the proposed projects are for steelworks and rolling mills. A few involve blast furnaces and closely related facilities and iron ore and bituminous coal supplies.

Expansion Needed — ODM is studying the need for another round of expansion. It is assisted by a report from the Business & Defense Services Administration of the Department of Commerce. That report is said to make no recommendations on expansion (see STEEL, June 20, p. 54). It cites the small cushion of idle capacity now available.

Purpose of a fast amortization program is to expand private industry's productive capacity to meet mobilization goals. Unlike the World War II period, government ownership of defense facilities during the present "cold war" is being held to a minimum. Accelerated amortization does not involve investment of government funds. It merely designates what private industry projects are eligible for fast depreciation, allowing companies to recover their investments quickly. Under normal depreciation, companies were reluctant to make investments. It took them a long while to get their money back. When they did recover their investments, they found their inflation-weakened dollars would not replace the plants.

The Record — In the round of steel expansion during the Korean war, the government allowed fast amortization on 85 per cent of the cost of a blast furnace and closely related facilities; 65 per cent of the cost of a steel melting furnace and closely related facilities and semifinishing mills; and 50 per cent of the cost of a finishing mill.

What ODM has to do now is determine whether the nation's steel capacity would be sufficient for mobilization.

Pro, Con — You can find two schools of thought in Washington. One points out steel capacity is at an all-time high (ingot capacity is 125.8 million net tons) and says it is sufficient for mobilization

needs. Also cited is the Air Force's belief that any war would be short lived because of atomic and hydrogen weapons.

Other observers point out that ODM and Congress think any war would not be a quickie. The national stockpile of strategic materials is one evidence of preparation for a lengthy mobilization.

Politics? — Although any ODM goal is to be based on mobilization needs, what determines them? Could political and economic considerations influence a decision? A steel expansion program would put a lot of money in circulation; it would help keep business good; it would help pour federal income taxes into the treasury. Conceivably, a strong economy would aid mobilization, might even deter an aggressor. And next year is an election year. The "ins" wouldn't mind if business stays good.

The billion dollars' worth of projects filed with ODM could not be completed until 1959 or 1960 even if work were started immediately. How many would be dropped if ODM doesn't open a steel expansion goal can't be determined now. Undoubtedly some of them would go ahead if steel business remains strong.

Forecasts—Steel executives have been forecasting further expansions. A month ago, Arthur B. Homer, president, Bethlehem Steel Co., predicted that in the next 15 years the steel industry's ingot capacity would be increased 60 million tons.

The steel industry, according to American Iron & Steel Institute, expects to spent $695 million for improvements and expansions this year.

At Last, Steel Marking

A military standard for marking steel is now official. It was approved June 23 by the Defense department and is known as Military Standard 183.

It will be used by the Army, Navy and Air Force and perhaps the Atomic Energy Commission.

Marking will be used only where critical needs exist or where steel is to go into inventory. Covered are bars, extruded shapes and shaped tubing, plates, sheets and strip and tubular products.

How To Be 75 Per Cent Safer

Reducing accidents takes a planned program, says Atlantic Steel Co. You have to sell employees on safety techniques and equipment—not demand that they use them

ADVERTISING and promotion can sell safety programs to employees. Management at Atlantic Steel Co. has reduced accidents 75 per cent through an employee campaign designed to guide and advise rather than force safety as a "must."

Mission Completed—C. J. Vandeventer, safety director, remarks: "When our employees began to ask for respirators and other safety equipment, we knew our program had arrived. It is an employees' program now.

The accident prevention committee at Atlantic consists of supervisors, foremen and union representatives. All share responsibility for the safety of the firm's 2000 employees. Safety meetings are held weekly in all departments. Skits are often used to drive home the safety message.

Reminders—Signs and displays are seen throughout the plant. Result: Employees begin to consider safety and also are appreciative of the concern the company shows for their comfort and welfare.

More Reports for SEC

A mid-year financial report (in addition to an annual report) is now required by the Securities & Exchange Commission from hundreds of business firms. Companies affected are those with securities listed on stock exchanges and those which have registered securities for public sale.

Aim of the new Form 9-K report (see STEEL, May 16, p. 70) is to provide the investing public with more current information. The report is due 45 days after the end of the first half of the fiscal year, starting June 30, 1955.

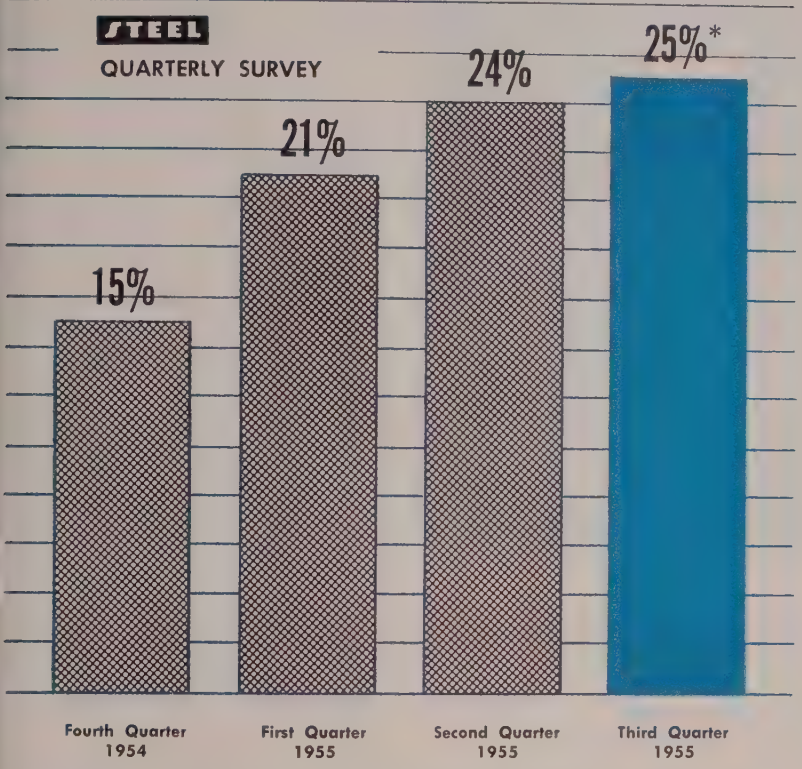
The mid-year reports are to contain information about sales and gross revenues, net income before and after taxes, extraordinary and special items and charges and credits to earned surplus. The reports need not be certified.

Mine Safety Appliance Co.

A Dustfoe protects worker as he blows out an electric motor with compressed air

Major Industrial Components

(% of respondents who added to inventories)



Survey includes: Bearings, castings, hose couplings, cylinders, electrical equipment, fasteners, forgings, gears, mechanical rubber goods, screw machine products, springs and wire shapes, stampings, weldments.

*Respondents' estimates

Strong Buying Through Summer

LOOK FOR this in third-quarter buying of industrial components: Purchasing at about the second-quarter rate; deliveries generally good, if extended lead times are taken into account; higher prices.

That's the consensus of metalworking executives reached by STEEL's latest quarterly survey.

Continuation — The inventory building that began late last year is continuing. Buying plans for third quarter indicate that any summer dip will be moderate.

For one thing, the number of firms planning to increase inventories continues to grow (see chart). Of those, 71 per cent say it will put them in a better business position. Only 7 per cent think they'll be worse off.

Frustration — Companies planning to reduce inventories also are more numerous this quarter, but are pretty well balanced off by those whose stocks are still growing. In some cases, inventory reductions are involuntary; the PAs say they'd like to build up stocks but can't because of tight deliveries. In other cases, seasonal factors come into play.

But basically, the picture is one of optimism. In the latest survey, 36 per cent of respondents say they'll be better off, inventorywise, at the end of the quarter than they are now. In the last quarter, 33 per cent thought that way.

Elongation—All told, 4 per cent think they'll be worse off. It's double the number of a quarter ago, but inability to get deliveries on needed components is partly responsible.

Delivery times lengthened during the last quarter, but, in general, slightly higher inventories compensated for the longer lead time. "Steel is the only material giving difficulties at this time," is how a number of PAs size up the situation.

Inclination—Over-all, 88 per cent of the PAs say deliveries are adequate. That's about the same as a quarter ago. At the first of the year, though, 98 per cent said deliveries were OK.

Pointing up a tighter delivery situation is the number of replies putting one or more components on the hard-to-get list. Almost 70 per cent say they are having trouble with at least one item. Last quarter, less than half had complaints. The result is even more customer pressure for quick delivery, several PAs note.

Aggravation—PAs see little easing over the summer. Vacations are one factor that will aggravate the situation. For the first time in almost two years, some report they're pinched because of strikes.

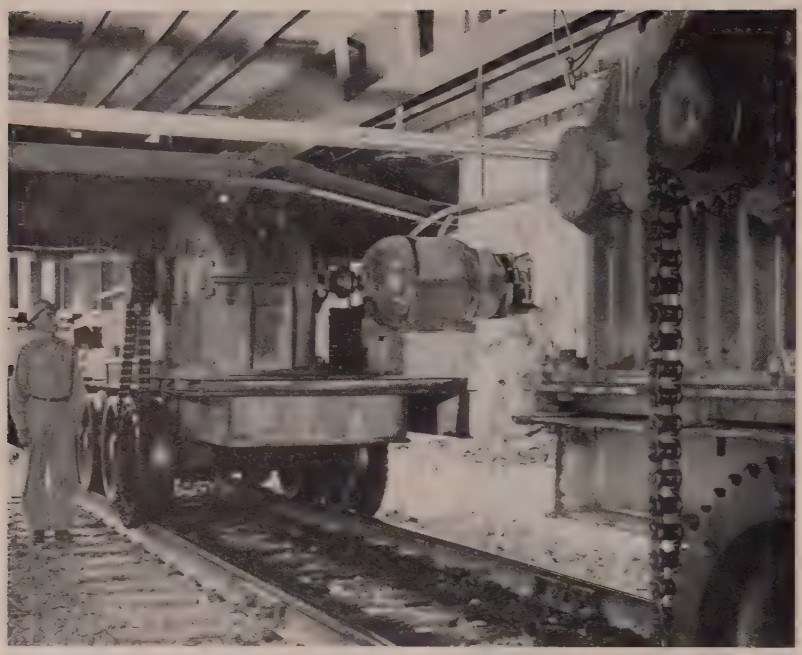
Longer delivery times are having their effect on buying policies and inventories. "We must schedule farther ahead," says one PA. Another outcome is this comment: "We feel lead times are too long, and we must guess too far ahead as to requirements and keep too big a protective inventory."

Prognostication — Prices also were a factor in last quarter's inventory growth. As one PA put it: "We have been building our inventories gradually over the last 90 days anticipating higher prices in the third quarter."

Castings still are the main trouble spots as far as deliveries are concerned, mostly because of long lead times. "Casting orders are not delivered complete or on time," summarizes one western executive.

Qualification—But deliveries do seem a little improved since a quarter ago. Then, one-third of the users of steel castings reported delivery troubles. This quarter, only half that number do. Malleable castings showed a smaller improvement, but more users of gray iron reported difficulties.

Antifriction bearings got tighter in spite of generally higher inventories. On the other hand, lower inventories of gears gave rise to almost double the complaints of a quarter ago.



General Electric Co.

An expanding national economy provides the link as . . .

Power Chain Sales Gain

THE POWER TRANSMISSION chain industry this year will exceed its sales totals for the last two years. Reason: Its sales are linked to the national economy.

At the beginning of the year, power chain manufacturers were hoping they would reach 1954 sales levels.

Then It Happened—Farm equipment, which uses a lot of chain, began to enjoy an upswing in orders. Other users of chain in power transmission applications—earthmoving, conveyors, oil country, mining, food processing, construction and sawmill equipment—began to increase chain orders as their own backlogs grew. And the auto industry, enjoying what may be its best year, uses silent timing chains in engines. Aircraftmakers also use certain types in plane control systems.

Some 15 companies produce most of the domestic power transmission chain. It is sold to the consumer either direct or through manufacturers representatives. From 50 to 65 per cent is used for original equipment. The balance represents replacement business.

More Sales?—One producer reports: "We should all pay more attention to replacement sales. Chain lasts longer than drive sprockets. By the time the sprocket is worn, new types of chain and sprockets probably are in use. This means that a company should consider new, improved and more efficient power transmission chain when sprockets or chain need major repair. You can't get superior results with 5, 10 or 15-year-old chains."

Automation and plant expansion are opening broader sales horizons for power transmission chain applications. Chain is finding added acceptance because: 1. It is a positive power transmitter. 2. Exact timing is assured in machine operating cycles.

Some Problems — Steel roller, steel bar link and cast malleable iron chains are the main types used for power transmission. Forging grade steel is used for sprockets. The biggest problem shaping up for the second half of this year will be how to get enough steel, not where can more customers be found. The shortage of nickel, which is needed for the alloy steel which the industry specifies, may also threaten output. Chainmakers must also keep pace with machinery producers. This means that power transmission chain is constantly being upgraded to operate at higher speeds with greater load-carrying capacity.

Atom Business: $710 Million

By 1963 the annual volume for components of nuclear plants will add $710 million worth of business to the American economy, predicts the Atomic Industrial Forum.

The components, says Francis K. McCune, a GE vice president and general manager of the company's Atomic Products Division, "will consist of reactor units, heat exchangers, pumps, valves and fittings, piping, welding, tanks and auxiliaries, coolants, instrumentation, fuel handling equipment and auxiliary systems.

Although nuclear plants cost more than conventional ones, the beginning of the atomic power program is not expected to be greatly hindered because of two advantages:

1. Nuclear plants offer the greatest potential for cost reduction after start-up.

2. Work in the atomic field now will give an advantage when the rush to convert gets under way.

Atom Power: 5 Million Kw-Hr

The nation's first two atomic submarine propulsion plants, the *Nautilus* engine and its prototype, have generated more than 5 million kw-hr of electricity. Both engines use most of their power to turn propeller shafts, but turbine-generator sets are used for power generation.

Westinghouse Electric Corp., Pittsburgh, builder of the submarine power plants, is making the rector for a full-scale atomic-powered electric generating station at Shippingport, Pa.

Westinghouse also is working on two additional atomic submarines as well as development of a nuclear power plant for the propulsion of a large Navy surface ship.

SUP Begins To Filter Down

The Ford-type contract is setting the pattern thus far. One consolation: Experts believe it will cost 14, not 20, cents per hour per man

LABOR SETTLEMENTS involving Supplemental Unemployment Payments are beginning to be accepted by a few smaller firms. Some companies in nonautomotive fields have also taken on SUP.

Some 6000 tool and die workers in 76 Detroit-area plants won wage hikes up to 15 cents an hour in a new three-year contract which calls for a supplementary layoff pay plan. The companies affected will place 5 cents an hour for each hour worked by employees in a central pool. This fund will build up for one year. At this time, it has not been determined how much workers will be paid in case of layoff. Discharged workers will also be covered by the fund.

Another—Eaton Mfg. Co., Cleveland, has signed a wage contract with the CIO-United Auto Workers which extends the Ford-type settlement to this auto parts firm.

Though full details were not announced, a SUP plan is included. William McAuley, director of the UAW's Eaton council, remarked that benefits equaled those gained by Ford and GM employees. "It shows that smaller companies can afford the UAW package," he said.

The new contract covers about 4100 workers in four plants—Cleveland, Detroit, Battle Creek and Marshall, Mich. The company's Vassar, Mich., plant, where workers recently agreed to a 61-cent-an-hour pay cut to keep the plant from closing, is not involved. It is covered by another union.

One Out—A small auto stamper also has taken the plunge. Barcy-Nicholson Co., Detroit, has granted its 60 workers a new three-year contract which calls for SUP. The central pool plan includes a 5-cent-an-hour set-aside for each worker. There is one big loophole. E. J. Wood, industrial relations man at Barcy-Nicholson, reports: "We've agreed to go along and try it, but if it is found that we can't carry it because it affects our competitive position, we will go back and ask the union for wage cuts"

Others—Atlantic and Gulf ship operators have agreed to the employment security plan presented by the National Maritime Union. American Velvet Co. and the Textile Workers Union of America also have reached agreement on SUP. This covers some 500 workers. Men with ten or more years of seniority will receive $40 a week for a maximum of 52 weeks.

Meanwhile — Chrysler Corp. and the CIO-UAW are rolling up their sleeves as the initial sessions get under way. Chrysler's contract expires Aug. 31.

Point of interest: Some experts feel that the cost of the UAW package for Ford and GM is in the neighborhood of 14 rather than 20 cents an hour per worker.

Coming: Auto Contract Guide

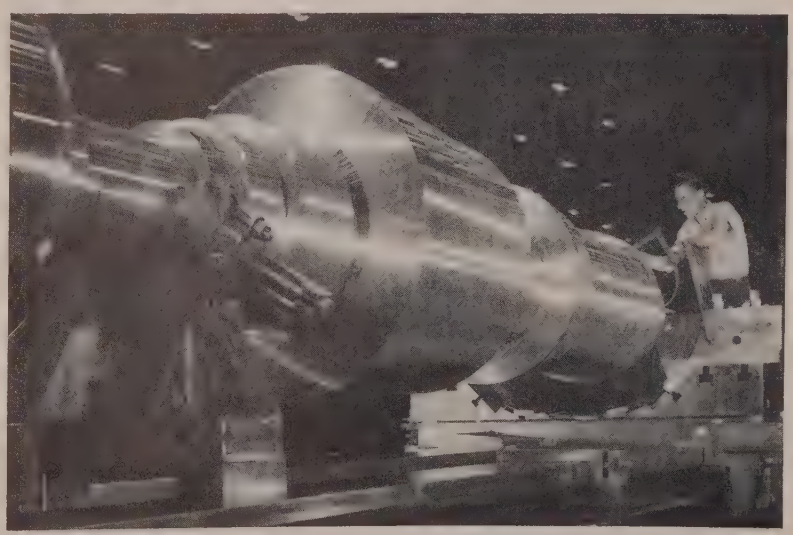
The Department of Labor plans to issue a guide to states on whether to and how to tie their unemployment compensation programs to new auto contracts.

James P. Mitchell, labor secretary, reports: "The problem of integrating the private and public benefit plans is complex. Considerations vary from state to state." Within the next few weeks, the department hopes to have a report prepared which will make the government's position clear. Mr. Mitchell states that this is primarily a state problem and that the responsibility for decisions will be left with the states. The report will attempt to interpret and clarify where each state stands in relation to the contract agreements which have been approved by Ford Motor Co. and General Motors Corp.

Ford Spreads Benefits

Salaried Ford employees may have a chance at the stock purchase plan turned down by the United Auto Workers. Henry Ford II, president, said the company is thinking of contributing part of the purchase price of the stock.

Specific benefits already have been announced for 46,000 salaried Ford employees in the U. S., which parallel those granted hourly workers.



GE Machines 16-ton Turbine Rotor

A grooving lathe in General Electric Co.'s Large Steam Turbine-Generator plant at Schenectady, N. Y., machines the turbine rotor for the high pressure element of a large steam turbine-generator. The unit, rated 260,000 kw, will be installed in Detroit Edison Co.'s new River Rouge station. It will be of the cross-compound, double-flow, reheat design developed by General Electric since World War II. The unit will produce power for more than 700,000 people

Seven Steps to

1. **Set deadlines for all chief data and stick to them.**
2. **Balance accounts daily.**
3. **Set up a uniform chart of accounts and standard forms for reporting.**
4. **Don't sit on figures.**

Simplified accounting system helps management . . .

Put Financial Reports To Work

FIVE days after a month ends, Rockwell Mfg. Co.'s management gets a consolidated operating statement covering its 22 operating units.

"It can be put to use immediately, while problems are still fresh, while opportunity for action is greatest. The blind spot between operation and audit is shaved as much as several weeks from normal practices." That's how Munro Corbin, Rockwell's controller, describes the system's advantages.

Basis—The system depends upon the application of a relatively few principles rather than a high degree of mechanization in auditing departments. "Any small plant," says Mr. Corbin, "should have no trouble in meeting the schedule with an absolute minimum of equipment, generally limited to adding, calculating or bookkeeping machines."

No attempt is made to provide figures which an accountant would call precise. Instead, management gets a representative picture of a full month's shipments and expenses which is accurate enough for internal use. Deadlines are set on all principal data. Recording of some factors is started before the end of the month, and a "fiscal month" is set up for shipments in which the calendar month is set back no more than four days, depending on shipping location.

Benefits—The time gain results from not holding books open for vendors' invoices (which straggle in through the month) or for billing every possible shipment from all plants and warehouses. Firm schedules are set and adhered to.

To help operating units complete their bookwork on time, Rockwell accountants balance their accounts daily, closing out such items as shop payroll and customer billings. Totals are accumulated, so that there is no bottleneck when it's time to summarize the month's transactions.

Standard—Some 20 statements are submitted each month to the controller's office from each operating unit. A uniform chart of accounts, with each account identified by code number, is used by all plants. To simplify interplant transactions during the month, the same classifications are applied to all ledger accounts. Standard forms also are used for reports.

A standard cost system is another requirement. By converting all inventory charges to predetermined standard values, Rockwell eliminates the necessity for carrying so-called "actual" costs all through the accounting records. It also is able to cost shipments on a daily basis.

Simplification — Secondary distributions (management and divisional sales expenses—mainly applicable to multiplant companies), are eliminated from the books where possible. Prorated portions of such expenses are charged back on a statement basis rather than as book entries. Where book entries are essential, as in billing a subsidiary, the billing is recorded the following month.

Most of the work of preparing statements is done in advance. As a result, consolidation can proceed rapidly when the income and expense statements, balance sheets and other schedules arrive.

Speed—Perhaps the most significant consideration in making

Faster Financial Reports

5. Organize standard cost systems to permit immediate costing and daily recording.

6. Eliminate secondary distributions from the books where possible. These are mainly applicable to multiplant companies and include management and divisional sales expenses.

7. Systematize advance statement preparation and consolidation.

The accounting function more valuable to management is just plain doing it. "It is unfortunate but true," remarks Mr. Corbin, "that many accountants like to 'play house' with figures and delay monthly reports to management. Most of these delays are a result of habit rather than of necessity.

"This is proved by the short time — seldom more than one month—in which Rockwell customarily swings newly acquired companies into its accounting schedule. When a new company is taken over, the system is sold to it as a tested product of years of experience. To date, all have readily accepted the advantages of the change."

Workings — In practice, three sets of forms are mailed to the headquarters office from the divisions by the third workday after month end. These are profit and loss, balance sheet and a statement of accounts of purchases and sales of the other operating units of the company. General expenses, such as management, selling, freight-allowed and advertising are allocated at headquarters.

In the controller's office, the consolidated statement is prepared as the forms arrive. Although the third-day deadline of mailing from the operating units is sometimes missed, there is enough flexibility in mailing or telephoning the information that the five-day deadline can still be met.

Fifth-Day Report—The consolidated statement is distributed to the company's top operating officers and directors. It is made up of six main categories: Customer and interplant sales; cost of sales; manufacturing cost; plant expenses; plant operating profit; general expenses; and net and gross profit. Sales cost variances also are shown. In addition, figures for each month and totals for the year to date are indicated by amount and per cent of budget.

Meanwhile, the operating divisions mail in their additional report. This material is gathered into an operating report on each division or subsidiary. Data are analyzed in the controller's office and a resume is written.

Tenth-Day Report—This analysis, which contains an item-by-item explanation of trends and unusual patterns, is distributed on the tenth working day to all in the management group from plant manager up. It shows how the costs of labor, purchases and manufacturing compare with standard costs. It also covers inventory status and manufacturing cost variables, including such items as spoiled work and fixed charges.

Payoff—Mr. Corbin sums up: "At Rockwell, this fast measurement of how the company is faring affords management greater flexibility and a time advantage. It is better able to capitalize quickly on strengths and counter such profit drainers as creeping expenses, inventory imbalances and production or sales challenges from the competition."

• Extra copies of this article are available in quantities from one to three until supply is exhausted. Write Editorial Department, STEEL, Penton Bldg., Cleveland 13, O.

Selling Marginal Accounts

Check your approach to handling the small account before labeling it as an "unprofitable customer."

That advice was given by J. S. Hawley, marketing manager, Shakeproof division, Illinois Tool Works, at the American Marketing Association's convention.

From the chief factors which contribute to the unprofitability of an account, two broad classifications can be made: 1. The account has high potential with unsatisfactory sales factors. 2. The account has small potential.

Right Approach — Better salesmanship is the answer if a small client falls into the first category. The second classification takes special handling to make it a profitable account.

Mr. Hawley suggests: 1. If it is not feasible to send a personal engineering contact, easy-to-understand catalogs explaining the standard product line should be mailed after an initial sales call. 2. Inquiries and requests should be followed up by telephone or letter. Field offices often can perform this function and reduce the burden of follow-up calls. 3. Order handling must be efficient. Adequate stocks must be maintained; all basis for customer quality complaints must be eliminated. 4. Prices must be realistic and reflect the high unit process costs of small orders.

Mr. Hawley points out that usually 85 per cent of a company's volume is directed to 15 per cent of its customers. The small customer—the remaining 85 per cent —must be a strong secondary supporting element which helps to insure against loss of volume.

U.S. Tries To Break Patent Jam

IF YOU'RE awaiting a patent on a thingamajig, be patient.

It'll take 3½-years to get it through. American geniuses have been so inventive they've log-jammed the U. S. Patent Office with work. But the problem is nothing money won't solve, and therein lies the hope of the Patent Office.

More Men — An appropriation bill in Congress would give the Patent office $14 million, a $2-million increase. This additional sum would enable the Patent office to add 300 assistant examiners to its staff. They, plus the present 650 assistant examiners, would help the office keep current with the inflow of applications and perhaps reduce the backlog.

About 80,000 applications are rolling in a year, and the Patent office is falling behind 10,000 to 12,000 a year. On file is a backlog of 220,000 applications. It would take ten years to wipe it out, even if the 300 assistant examiners are added; they would come from the ranks of engineers, chemists and physicists. If they have no law training, they will be asked to take it while they work.

War Born—In the last two or three years there has been a big increase in applications. That happens after every war.

The Patent office is only about 50 per cent self-supporting. It hopes to close some of this gap by raising its fees, which have been unchanged since 1932. Proposals to raise fees are in two bills in Congress: H. R. 4983, introduced Mar. 16 by Rep. Emanuel Celler (Dem., N. Y.); and H. R. 6175, introduced May 11 by Rep. George H. Mahon (Dem., Tex.). Both bills were referred to the Judiciary committee.

Detail—Among the big changes proposed: A $10 increase (from $30 to $40) for applying for an original patent having five or fewer claims (except for design patents). A filing charge of $5 for each claim over five (it's now $1 for each claim over 20). A $20 increase (from $30 to $50) for the final fee on an original patent (except for design patents). A final charge of $5 for each claim over five (it's now $1 for each claim over 20). A $10 to $15 increase in filing fees for design patents, depending on how long they are for. A $10 increase (from $30 to $40) for application for the re-issue of a patent, and a $5 charge for each claim over five (it's now $1 for each claim over 20).

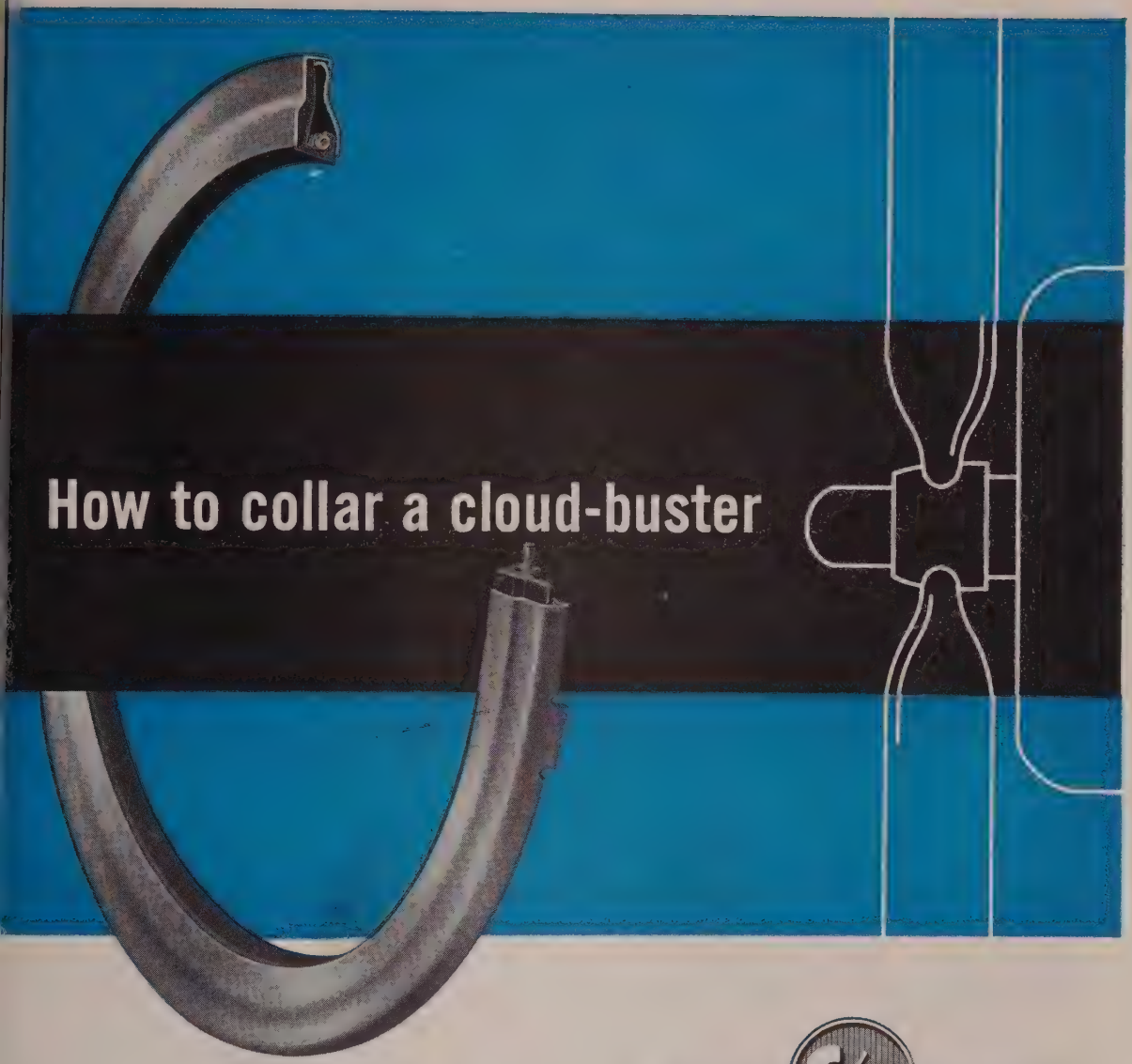
Changes proposed for trademark fees include a $5 boost for each original application. The new charge would be $30.

Washington Whispers

Willamette Iron & Steel Co., Portland, Oreg., was considered the lowest responsible bidder for a contract to convert two government-owned Mariner-type cargo ships into passenger liners for the Oceanic Steamship Co., San Francisco. Willamette's bid was $26,624,000 on a fixed basis. . . . Bethlehem Steel Corp. was awarded a $3,745,000 contract by the Defense department to convert the *USS Vanadis* from an attack cargo ship to a cable repairing or laying ship. . . . Pan Atlantic Steamship Corp., Mobile, Ala., applied to the Maritime Administration to construct seven new-type roll-on, roll-off ships to haul truck trailers. It would trade in to the government seven obsolete C-2 type ships. Cost of the new vessels would be $9 million each.

Meet George H. Compter: He is serving as a consultant on synchro and servo devices to the Electrical Equipment Division, Business & Defense Services Administration.

Mr. Compter is on leave from Ford Instrument Co., division of the Sperry Corp., where he is assistant to the vice president and secretary. At Ford Instrument, he is responsible for the long-range planning of component manufacture. In Washington, Mr. Compter may be contacted by calling Sterling 3-9200, Ext. 4241



AND BRING COSTS DOWN TO EARTH!

Where the propeller shaft enters the gear case, the design specs called for a piston ring seal. It was dependable . . . but through cooperative efforts of Curtiss Wright and C/R engineers, a simpler seal was designed, equally as dependable but saving space and cost. It works perfectly. This C/R seal provides lubricant retention sufficient to seal a vital bearing under severe conditions. This is a typical example of C/R seal engineering service. May we help you, too, with your sealing problems? Send for your copy of "C/R Perfect Oil Seals."

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1301 Elston Avenue **OIL SEAL DIVISION** Chicago 22, Illinois

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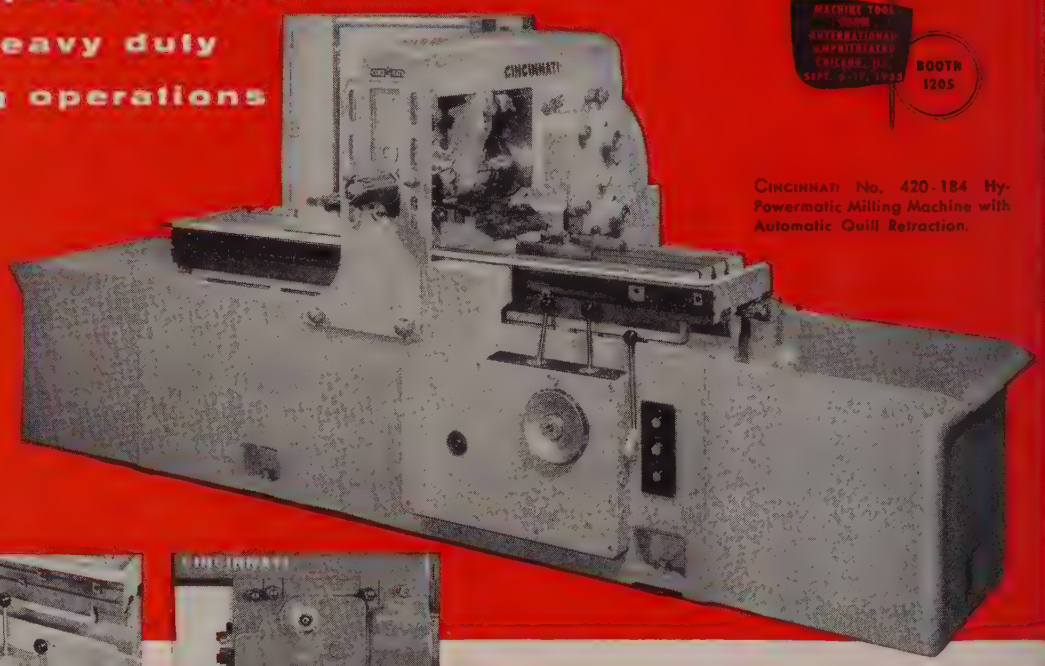
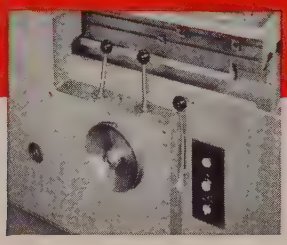
NEW CINCINNATI HyPowermatics

make quick work of your heavy duty milling operations

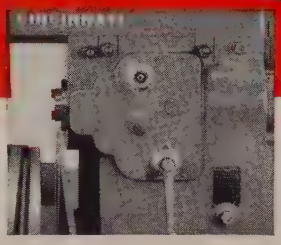


MACHINE TOOL INTERNATIONAL EXPOSITION CHICAGO, ILL. SEPT. 6-17, 1932 BOOTH 1205

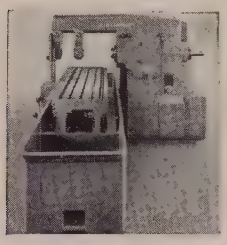
CINCINNATI No. 420-184 HyPowermatic Milling Machine with Automatic Quill Retraction.



Convenient, compact grouping of operating controls reduces fatigue. HyPowermatic design will make a big hit with your operators.



Save the smooth surface made by face milling cutters, with Automatic Quill Retraction (optional equipment at extra cost).



Chip catcher bed design keeps the floor clean. Chips and cutting fluid stay where they belong, within the bed.

Hardened and ground table ways and square gib construction add their share to HyPowermatic's high cutting capacity.

You'll see costs tumble down when you assign your heavy duty milling operations to new CINCINNATI HyPowermatics. They have the capacity to remove metal quickly; they have new control features that help the operator turn out more work with no increase in effort. Reasons why are numerous:

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2) Hydramech table drive . . . assures uniformly smooth feeding motion
3) Built-in backlash eliminator . . . for down-milling and up-milling jobs
4) Automatic spindle stop . . . reduces occupational hazard
5) Automatic two-way table cycles
6) J.I.C. hydraulic and electrical standards
7) Unit type construction, two styles and 42 sizes of each of plain and duplex styles . . . an extra wide selection to fit your requirements

Eleven additional highlights of design and complete specifications for all HyPowermatics will be found in new catalog No. M-1871. Ask for a copy today . . . compare . . . and you'll see why CINCINNATI HyPowermatics can make quick work of your heavy duty milling operations.

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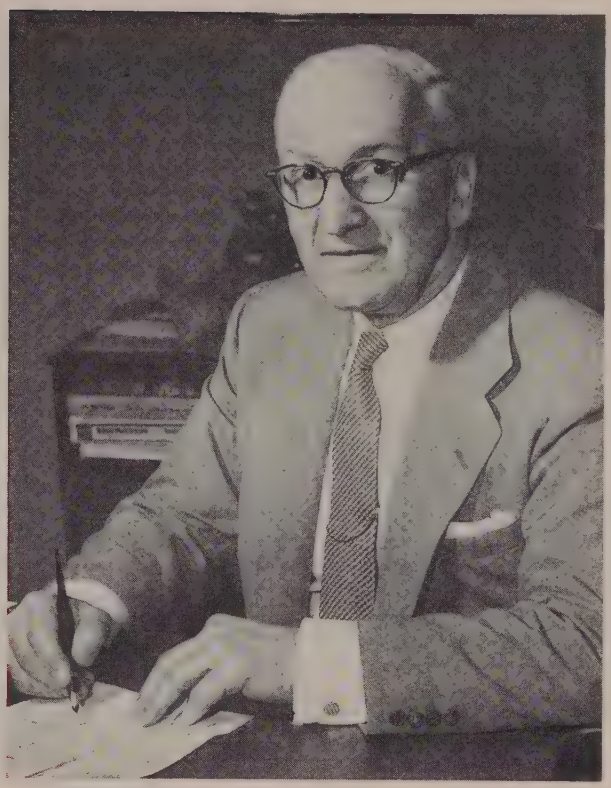
OPTICAL PROJECTION PROFILE GRINDERS • CUTTING FLUID



J & L's Gottschalk Co-ordinates Shipping

KEEPING TRACK of some 16 million tons of steel and raw materials a year is the job assigned to C. W. Gottschalk, assistant vice president, traffic and transportation, Jones & Laughlin Steel Corp.

He develops plans, policies and programs involving transportation for the corporation and its subsidiaries. Prime requirements for handling the job: Experience and flexibility. Experience helps in handling consumer requests for the best way to route material. Flexibility is a must when orders rise or fall.

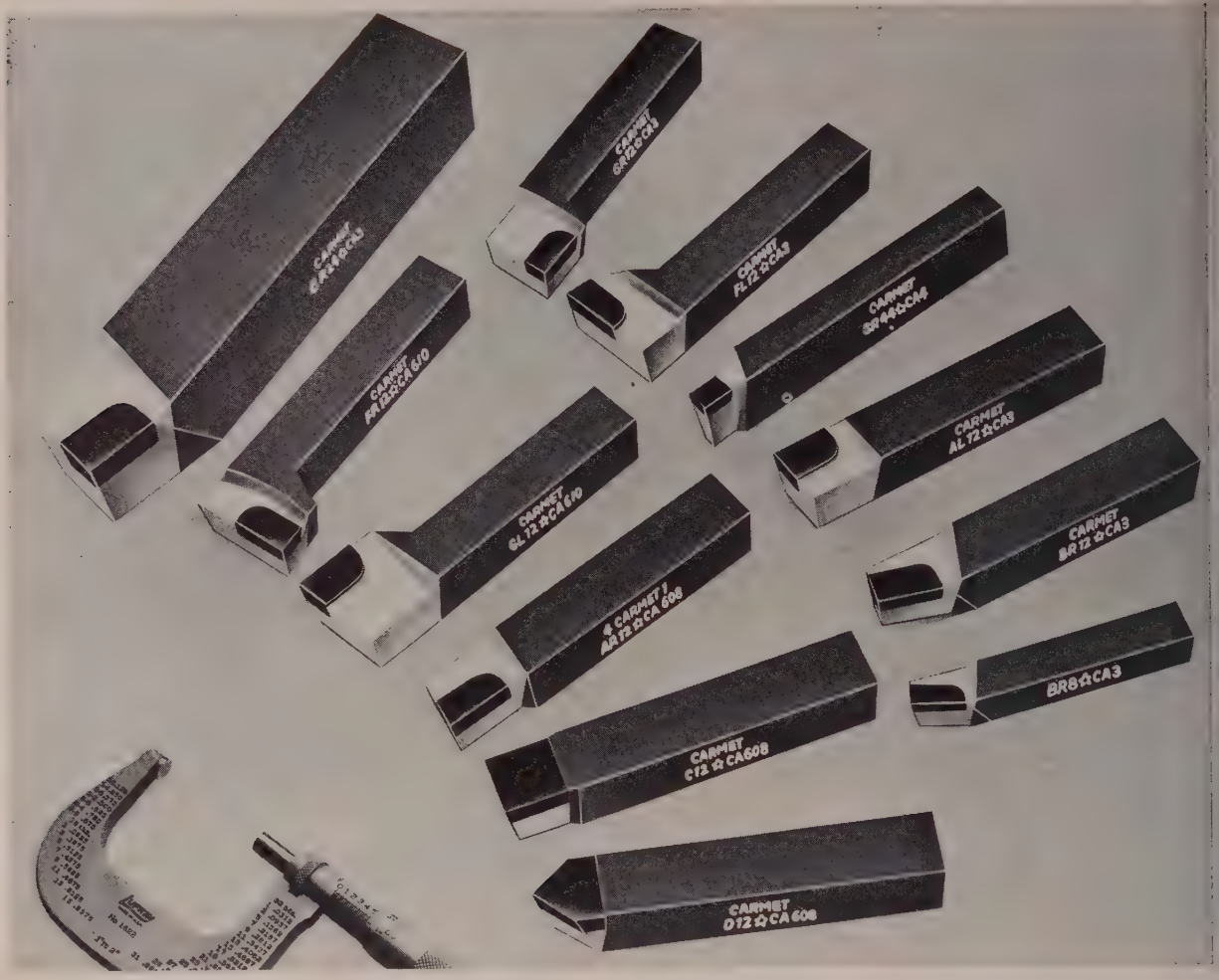
Quick Action—Mr. Gottschalk, who gained much of his experience serving with eastern railroads, states: "Any sudden upswing in sales means changes have to be made quickly by our division. Iron ore shipping schedules may have to be revised up or down. If the railroads cut down on serviceable freight cars because they anticipate a decline in carloadings and our shipments increase, we must do more work with less equipment." The division also guides the scheduling of barges and trucks which move raw materials and finished steel in and out of the mill.

Analyzing freight rates and operating a tracing department to expedite shipments are additional services Mr. Gottschalk supervises. And he represents the company and its subsidiaries before the Interstate Commerce Commission and state legislative groups.

Complications—"One plant's shipping schedules will demand that 88 per cent of its freight cars must be gondolas and 8 per cent boxcars. Another plant's products will require 47 per cent gondolas and 21 per cent boxcars. We must allow for each plant's specific requirements in our planning," comments Mr. Gottschalk. When a customer fails to provide instructions, Mr. Gottschalk must handle all routing directions.

"Service is paramount," he says. "Our customers want steel on time and in top condition. Overnight delivery by truck to heavy users helps reduce his steel inventory. Railroads are helping quick delivery by making great strides in designing new cars.

Breakdown—Last year the traffic and transportation division supervised the routing of 3.2 million tons of rolled steel products in addition to co-ordinating the movement of 5 million tons of coal and 1.3 million tons of limestone. Iron ore, the largest single item, will reach the 7-million ton mark this year, with shipping of finished products, coal and limestone rising substantially. Mr. Gottschalk will be kept busy talking with representatives from Pittsburgh's 125 railroad and steamship agencies.



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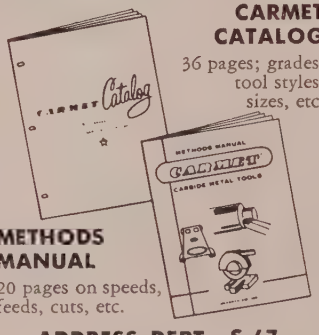

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Authenticated News

Though Volkswagen dumps U. S. from second spot . . .

Detroit Wins Out in Export Mart

ALTHOUGH the U. S. is steadily losing ground to Western Europe as a direct exporter of automobiles, her interest in the world market is increasing.

In 1938 the U. S. provided over 60 per cent of world auto and truck exports. Last year her share was down to 30 per cent of the 1.3 million total. A German export push, spearheaded by the fast-selling Volkswagen, had displaced her as second largest exporter of cars, behind England.

Answer No. 1—American automakers are using a variety of approaches to foreign operations. In direct competition with the Volkswagen, for instance, GM has announced a $71-million expansion for Opel, its German subsidiary. Ford also is expanding its German operations.

These expansions are part of a world-wide spending program by Ford and GM. They have some 40 assembly plants and seven manufacturing plants between them in countries from Argentina to Australia. About $400 million is being spent to re-equip and modernize these foreign subsidiaries.

Answer No. 2—Ford and GM chose to compete by making smaller cars in the individual market areas. Chrysler Corp. is making money in the foreign "luxury" market by exporting modified Plymouths, De Sotos and Chryslers direct from Detroit. Says C. B. Thomas, vice president of the export division: "Our sales were up 10 per cent last year from 1953 and are running 25 per cent better this year."

Of the Independents, Kaiser Corp. has a $12-million expansion planned for its Argentinian subsidiary. It hopes to achieve full production of 40,000 units a year by 1958.

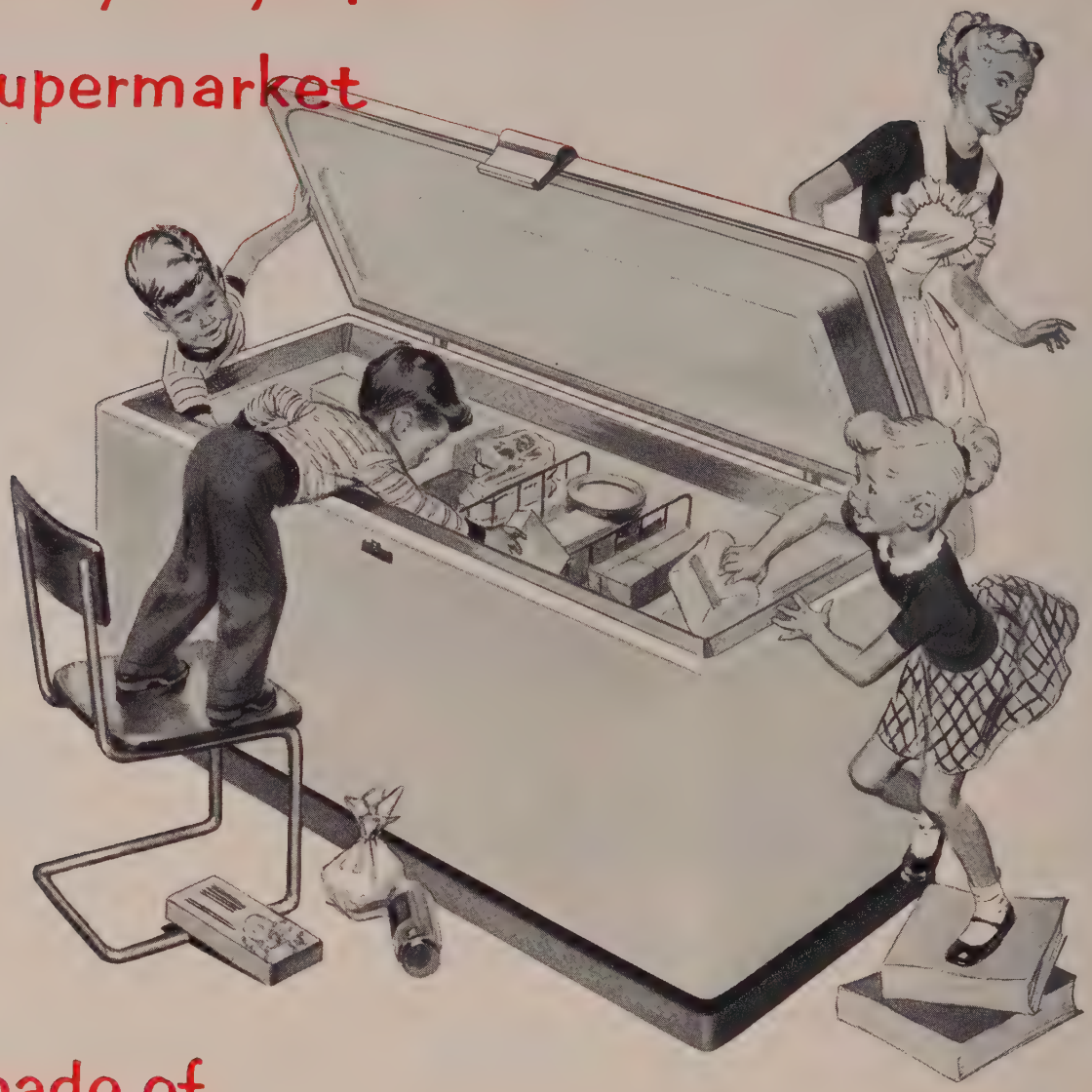
Answer No. 3—American Motors Corp. imports cars to the U. S. under an arrangement with Austin of England. This company —England's biggest producer— builds the Nash Metropolitan for export to the American domestic market. "The Metropolitan is now America's best-selling import," says George Romney, president of American Motors. Orders for an additional 20,000 units have been placed in England.

There is room for different approaches in competing for the booming global auto market. Outstanding growth areas are in opposite corners of the world. New Zealand and Brazil imported twice as many motor vehicles in 1954 than in 1953. Imports into Sweden increased about 50 per cent.

Growth—Free world auto output (excluding the U. S.) has enjoyed a steady growth since 1948, when it was about 668,000 units. By 1950, it had reached 1.4 million. It hit 1.8 million in 1953 and 2.2 million last year. The rate of growth has been twice as fast as that in North America.

Output is still going up. Prospects are for at least a 10-percent gain this year. Direct export figures notwithstanding, American automakers will be getting their share of sales.

everybody's favorite supermarket



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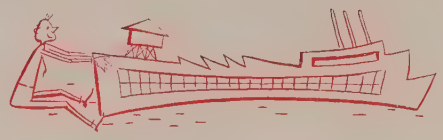
Where Automakers Will Expand

(Selected Major Projects)



BUICK DIVISION—Program to increase Dynaflow production to 500 units daily; six new foundry cupolas, Flint, Mich.

CHEVROLET DIVISION—New plants totaling 5,500,000 sq ft: Livonia, Mich., spring and bumper; Flint, Mich., engine and stamping; Tonawanda, N. Y., forge, foundry and engine; Warren, Mich., engineering center.

CHRYSLER CORP.—Dayton, O., Airtemp Division plant, 165,000-sq-ft addition; Los Angeles assembly plant, 15,400-sq-ft addition; Chelsea, Mich., new proving grounds.

FISHER BODY DIVISION—A $2,243,000 plant at Grand Rapids, Mich.; fabricating plant on former Detroit Transmission plant site at Livonia, Mich.

FORD MOTOR CO.—Stamping plant, Cleveland; stamping plant remodeled and improved, Dearborn, Mich.; forge plant expanded, Canton, O.; land acquired for new chassis plant north of Detroit; Tractor and Implement Division parts depot at Lincoln Park, Mich.; 4000-acre proving grounds in Detroit and Kingman, Ariz., areas; motor vehicle parts depot on 12-acre site at Minneapolis.

Continental Division headquarters and assembly building to be constructed; headquarters for five Rouge plant operating divisions, Dearborn, Mich.; manufacturing research building, Detroit; Tank Division plant, Livonia, Mich., converted to automatic transmission manufacture; new 12-story Central Staff office building, Dearborn, Mich.

GMC TRUCK—Truck assembly and paint operations to be enlarged 33,000 sq ft at Pontiac, Mich., home plant.

HUDSON MOTORS AND NASH MOTORS—Assembly consolidated in Kenosha and Milwaukee, Wis., plants.

LINCOLN-MERCURY DIVISION—$15-million expansion of assembly plants at: Metuchen, N. J., (120,000 sq ft); Los Angeles, (70,000 sq ft); and improvements at St. Louis and Wayne, Mich., plants.

PACKARD DIVISION—Over-all modernization and improvement; acquired Briggs Mfg. Co. Detroit car body plant; V-8 engine transmission and axle plant at Utica, Mich.

PONTIAC DIVISION—Foundry maintenance building, 45,000 sq ft; personnel building addition, 10,000 sq ft; car finish building, 150,000 sq ft; complete retooling of V-8 engine plant, 560,600 sq ft, all at Pontiac, Mich., home plant.

Source: Ward's 1955 *AUTOMOTIVE YEARBOOK*, 17th Edition

Big building programs pose the question . . .

Capacity Race in Autos?

AUTOMAKER REPORTS of expenditures for facility expansions run a close second, numerically, to reports of broken production records.

When the two are placed side by side, a reasonable question arises as to what the auto companies are going to do with more facilities when they already can produce at a rate of 8.5 million units for an annual market of only about 6 to 6.5 million vehicles.

Are the automakers, to put it bluntly, in a capacity race?

The Facts — Auto companies don't deny that capacity is being increased through expansion and modernization. Since the end of World War II, General Motors has committed $4 billion to capital investment in the United States and Canada. Chrysler Corp. has expenditures in the works which bring its total to $625 million, and Ford Motor Co. outlays will soon total $2325 million since World War II.

Somewhat in the manner that they deny the existence of a horsepower race, auto companies queried by STEEL last week explained that they are merely "meeting the needs of an expanding market." This blue-sky factuality contains an inference that the competition in the auto industry is nothing more than a somewhat boring price of popularity. But the fun begins when you attempt to probe into what market it is the automakers expect to meet.

The Figures — Immediately at hand are population growth and economic trend charts which make a total annual output of 8 million passenger cars seem fairly plausible within the next decade. But the question arises when it is noted that the automakers already can produce at a rate in excess of their expected market ten years from now.

In a nutshell, the explanation lies in the fact that each company is expanding capacity to meet its own expected market rather than the industry's expected market. It's fairly obvious that you can't sell cars you can't produce, so the rationale of expanded facilities adds up. On the other hand, sometimes you can't sell cars you can produce, in which case the overhead adds up.

The Dilemma—This constitutes a

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dilemma and explains why some auto company executives make large salaries. It also is a simplification of an extremely complex problem.

In the intensely competitive auto production field, unit cost is extremely important. This is true to the extent that automakers carefully dissect each others' products, checking materials, manufacturing methods and tolerances, and upon this information attempt to arrive at a unit cost figure. But a big factor in the key to unit cost is overhead and labor, factors which are directly related to capacity.

The Key — The usual definition of capacity is the production rate at maximum efficiency, the output which the plant was intended to produce. But like steelmakers, automakers can and do produce in excess of capacity. When that happens, unit costs go up.

It's rule of thumb in the auto industry that it takes about 4 man-hours in the assembly plant for each car produced daily. Thus, about 600 workers are required on the assembly line in a plant turning out 1200 cars on an 8-hour shift. To produce more cars, more man-hours must be added and that usually is overtime or premium shift operation. Then, too, as the conveyor is speeded up, keeping inventories in balance and workers out of each others' way nips at smooth operation. Compound this with the same thing happening in plants supplying the assembly line and the buoying effect on unit costs is not difficult to imagine.

The Reason—Yet there are good reasons for the automakers to produce beyond maximum efficiency. When new models hit the market, it's generally accepted that getting plenty of cars on the road quickly has much to do with sales success. The reasoning is that the more cars of the make people see on the road, the more inclined they are to accept the design as what a car ought to look like. And all this turns into a vicious circle of sales success which sales managers dream about.

As a negative illustration, perhaps you recall the delay in getting the new Studebaker design into production in 1953 after one of the most sensational publicity breaks in many years. Most industry people figure the car would have had considerably greater sales success had deliveries been able to ride the boom of public interest.

The Catalyst—But it's not just the initial model impact that's important. Demand which fluctuates with the seasons must be met or the chances are relatively high that the customer will buy an available competitive make. If he does, the odds are 3 to 1 he'll buy another in 2½-years. So output must be maintained even in the face of less than maximum efficiency and lower unit profit due to higher unit cost.

Much of the expansion and modernization which is taking place in the auto industry may be interpreted as reducing the need for above-capacity operations. But at the same time it permits the company to produce the same number of cars at lower unit cost, it also increases the ability to produce at over-capacity.

The Rationale—Since excess capacity constitutes overhead which adds to unit cost, a limit is fixed by the expected volume of the company. This is determined by analysis of the general economic climate, sales trends of the various makes and appraisal of the potential of future product designs. Also involved is the existing need to balance capacity. The whole forms a nebulous map for expansion and modernization whose genesis is independent of competition while its being is dependent on competition.

This situation makes it difficult to answer the question: Is there a capacity race?

Perhaps the best answer is simply that there is a never-ending battle in the industry to produce at competitive cost and to sell as many cars as possible. In both areas proper capacity balance is essential as shown above. It seems safe to state that no company is garnering capacity it does not expect to be able to use just for the sake of capacity.

The Result—Likewise, no company views its future darkly. The auto companies see continued growth of the economy. Moreover, each sees growth for itself within the economy and the industry on which it is betting its expansion dollars. Taking a long-term view, observers expect the rate of expansion and modernization to continue at or near present levels for some time to come.

The mere fact that automakers feel that way and translate their feelings into purchases may have much to do with the ultimate correctness of their view.

Auto, Truck Output

U. S. and Canada

	1955	1954
January	780,780	594,467
February	770,530	574,215
March	955,027	672,858
April	936,994	676,269
May	913,249	621,318
June	903,000*	623,732
July		543,540
August		523,799
September		364,441
October		312,078
November		616,395
December		761,954
Total		6,885,066

Week Ended	1955	1954
May 28	209,939	148,733
June 4	163,731	119,688
June 11	172,794	139,312
June 18	178,475	140,063
June 25	196,716†	140,695
July 2	187,000*	133,141

Source: *Ward's Automotive Reports.* †Preliminary. *Estimated by STEEL.

New Auto Designs Ahead?

The automobile industry is preparing an abrupt and radical departure in design, says *Ward's Automotive Reports.* Timing will be planned to take best advantage of current expansion programs.

With the introduction of 1957 models, look for the elimination of the 50-year-old "flat-sided look." Curved side windows and body panels, lower silhouettes and smaller diameter wheels will be the main differences. The side windows will be mounted flush with the car exterior, requiring new door design. Up-and-down wrap-around rear windows also are earmarked for introduction.

The new rear window treatment may appear first in several four-door soft-top convertibles, now being readied for production. Standard soft-top convertibles already are extinct at Nash, Hudson and Studebaker and are a money-losing item for many other producers.

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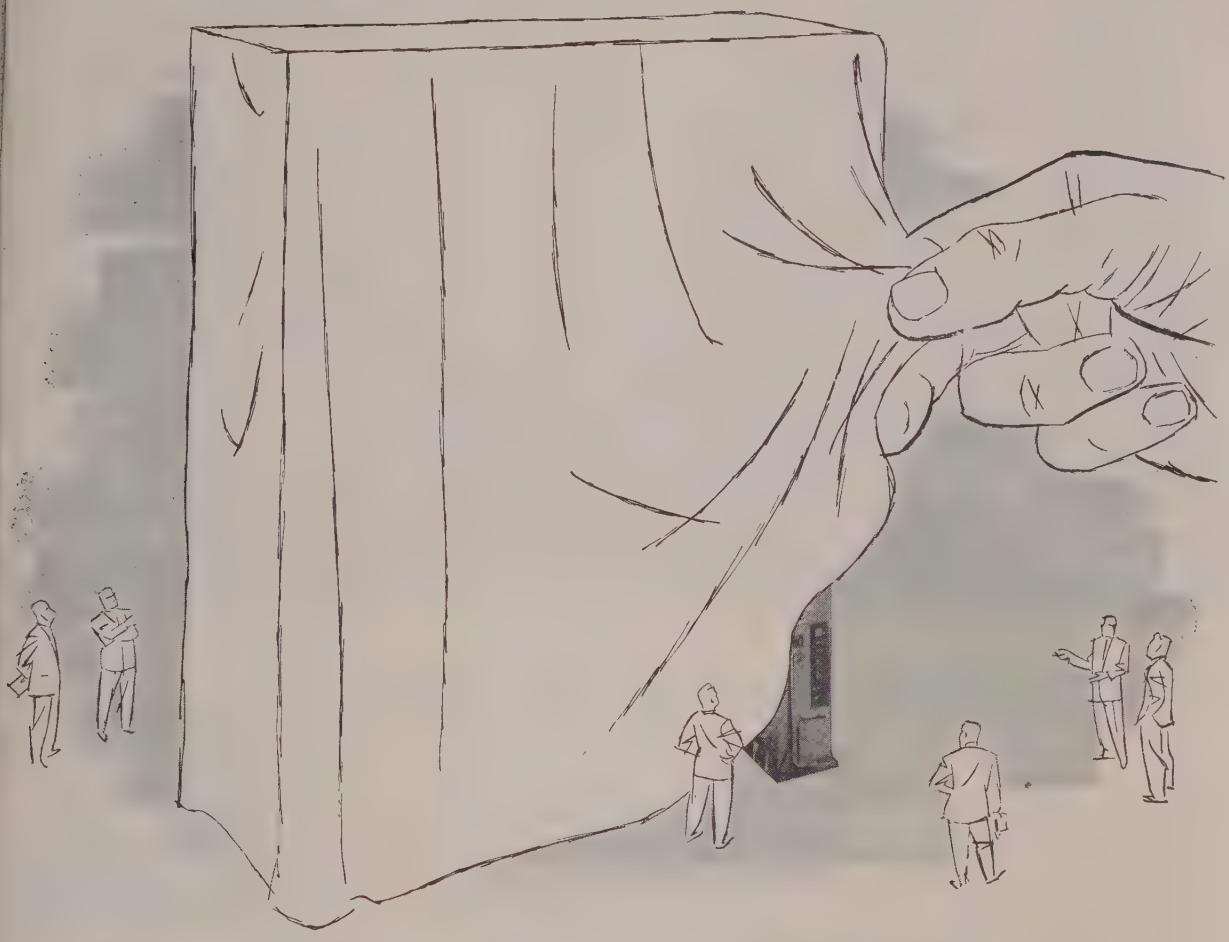

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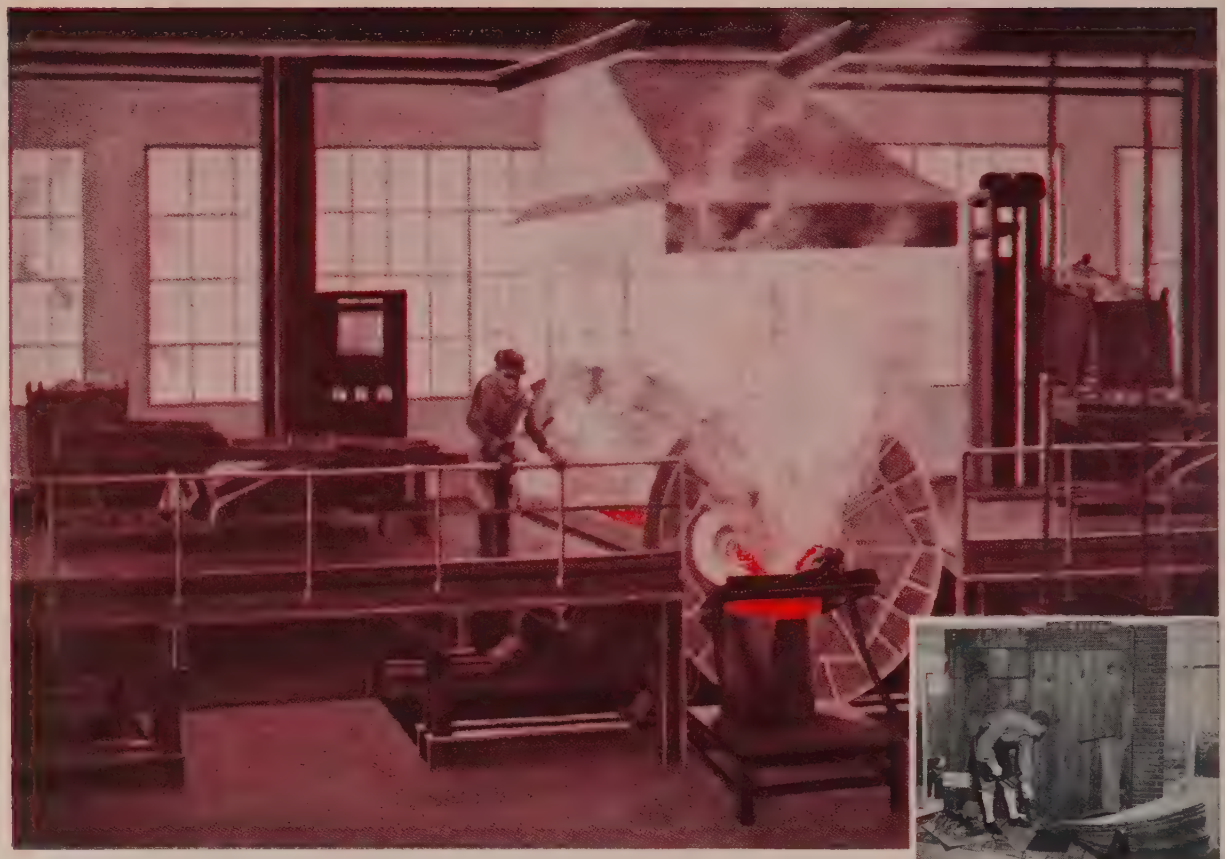

Skimming the pot prior to pouring into tiny 1 lb. capacity band-and-wedge molds.

BRASS MELTING THROUGH 150 YEARS

According to tradition and available records, founders of the Scovill Mfg. Co. of Waterbury, Conn. were first in the New World to cast brass bars commercially for subsequent cold rolling, at the old Abel Porter casting shop in Waterbury, Conn.

From this modest beginning has grown the huge Scovill Works employing thousands of employees and producing enormous quantities of cold-rolled brass. One of the initial steps in the process is the melting of brass in three of the largest and most powerful electric melting furnaces ever made, one of which is shown in the picture above.

In the early 1800's the man-hour rate of production with charcoal pit fires was from 5 to 10 lbs. In the early 1920's when AJAX INDUCTION FURNACES were installed, the man-hour rate was 800 lbs. Since 1949 when the latest type AJAX furnaces were installed man-hour production has increased five fold, and is now 4,000 lbs.

These modern 1000 KW AJAX Furnaces have a holding capacity of 20,000 lbs. with an hourly melting rate of 5 to 5½ tons.

Photos at right show a unique demonstration staged by Scovill at the Hotel Statler in Hartford of America's first practical brass casting method. Here an operator in authentic brass caster's clothes of the period illustrated the casting of metal melted by the old bellows-blown pit fire used in the early 1800's. The tools were loaned by the Mattatuck Historical Society of Waterbury.

Pouring from pot into molds.

Opening molds after pouring metal into them.

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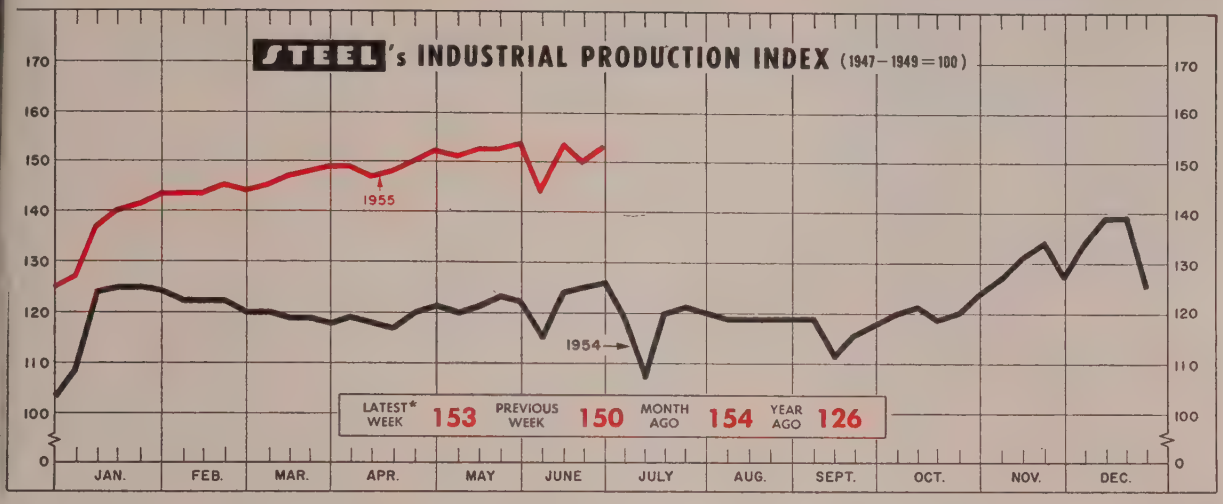
AJAX ELECTRIC CO., The Ajax Hultgren Electric Salt Bath Furnace
AJAX ELECTRIC FURNACE CORP., Ajax Wyatt Induction Furnaces for Melting



*Week ended June 25. Based upon and weighted as follows: Steel Output 35%; Electric Power Output 32%; Freight Car Loadings 22%; and Auto Assemblies 11%

Business Pickup Fans Out as It Slows Down

SIGNPOSTS of good business are plentiful in metalworking.

Steel production has been rolling along at 95 per cent of capacity or better since April. That super-rate may drop off moderately during the summer, but pepped-up auto demand following model changeover in middle and late summer will snap up much of any looseness that comes along.

Cleanup — Auto sales have slipped from April and May peaks though not enough to dash hopes that dealer inventories will be in good shape by the time 1956 models come out.

Production is still high—higher than was planned just a few weeks ago. But it will slow down when producers recoup strike losses. Ford is humming along at full throttle (except for Lincoln, already down for change-over). General Motors is hit by parts shortages, an aftermath of labor negotiation walkouts, but is champing at the bit and ready to jack up production as soon as possible.

Building—Chrysler output is tapering off, heading for a late-this-month change-over start. The Independents are running well ahead of last year's volume.

Construction continues to be an economic mainstay. The government estimates a rise to $41.8 billion this year, 11 per cent above last year's record. Housing will have its second best year, beaten out only by 1950. Looked for are 1.3 million starts.

Excellence—Heavy construction alone is 38 per cent ahead of last year and 14 per cent above 1953, the previous best, reports *Engineering News-Record*.

Business in the industrial heating industry continues excellent, announces Carl L. Ipsen, executive vice president of the Industrial Heating Equipment Association. Orders through May are 57 per cent ahead of last year's.

May itself was a record breaker. It topped by 6 per cent the previous high set last May. Bookings

BAROMETERS OF BUSINESS

	LATEST PERIOD*	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Production (1000 net tons)[2]	2,320[1]	2,292	1,568
Electric Power Distributed (million kw-hr)	9,950[1]	9,987	8,981
Bitum. Coal Output (1000 tons)	9,600	9,345	7,956
Petroleum Production (daily avg—1000 bbl)	6,628[1]	6,626	6,510
Construction Volume (*ENR*—millions)	$412.1	$328.0	$312.9
Automobile, Truck Output (*Ward's*—units)	196,716[1]	178,475	140,695
TRADE			
Freight Car Loadings (1000 cars)	788[1]	785	713
Business Failures (Dun & Bradstreet, no.)	219[1]	214	215
Currency in Circulation (millions)[3]	$30,035	$30,058	$29,735
Dept. Store Sales (changes from year ago)[3]	+2%	+3%	+4%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$22,649	$19,902	$21,515
Federal Gross Debt (billions)	$275.4	$277.5	$271.2
Bond Volume, NYSE (millions)	$20.6	$24.4	$18.8
Stocks Sales, NYSE (thousands of shares)	13,525	13,388	10,324
Loans and Investments (billions)[4]	$85.0	$84.0	$81.7
U. S. Govt. Obligations Held (billions)[4]	$32.8	$32.8	$34.1
PRICES			
STEEL's Finished Steel Price Index[5]	194.53	194.53	189.75
STEEL's Nonferrous Metal Price Index[6]	238.5	238.1	214.8
All Commodities[7]	110.3	110.2	109.9
Commodities Other than Farm & Foods[7]	115.7	115.5	114.4

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1955, 2,413,278. 1954, 2,384,549. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

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Owners Report

- "processes 8 tons of parts daily"
- "120% more production"
- "tremendous time and labor saver . . . time saved, 75%; labor saved, 81%"
- "cleans and finishes 1000 parts per hour in 16' x 40' floor space"

What do your part cleaning and painting operations cost?

too much? normal? don't know?

Let a Cincinnati Cleaning engineer survey your requirements, give you a no-obligation report which may point to important savings. For cleaning, or for completely integrated painting systems, you can depend on CINCINNATI.

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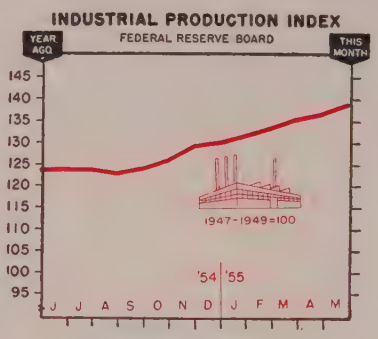
CLEANING AND FINISHING MACHINERY COMPANY, INC.
2019 Hageman Street, Sharonville, Ohio

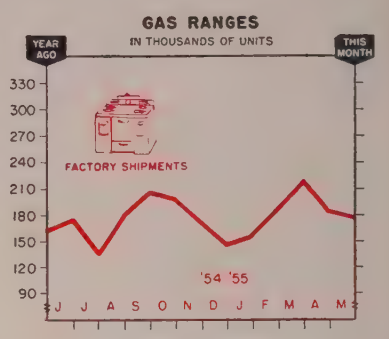
THE BUSINESS TREND



(seasonally adjusted)

	Total Production		Primary Metals		Metal Fabricating	
	1955	1954	1955	1954	1955	1954
Jan.	131	125	127	111	156	156
Feb.	133	124	131	108	157	152
Mar.	135	123	135	103	158	148
Apr.	136	123	138	104	160	146
May	138*	124	144*	106	162*	147
June	...	124	...	108	...	145
July	...	124	...	104	...	148
Aug.	...	123	...	105	...	148
Sept.	...	124	...	117	...	148
Oct.	...	126	...	110	...	149
Nov.	...	129	...	118	...	155
Dec.	...	130	...	120	...	156
Avg.	...	125	...	110	...	150

Federal Reserve Board. *Preliminary.
Charts Copyright, 1955, STEEL.



Shipments—Units

	1955	1954	1953
Jan.	152,900	137,000	169,200
Feb.	186,200	152,900	185,900
Mar.	217,300	188,200	208,200
Apr.	181,600*	172,400	220,300
May	175,100*	163,800	181,000
June	.....	174,300	166,600
July	.....	134,500	159,000
Aug.	.....	179,400	186,800
Sept.	.....	203,900	209,500
Oct.	.....	197,100	203,900
Nov.	.....	174,000	158,500
Dec.	.....	147,300*	134,400
Total ...	.....	2,024,800	2,183,300

Gas Appliance Mfrs. Assn.
*Preliminary.

hit $6.2 million; a year ago they were $5.8 million. Orders in the first five months are $31.7 million, compared with $20.2 million a year ago.

Materials handling executives at the first of the year saw a 15 per cent sales rise coming in 1955. Now some have raised their sights to 25 per cent, says the Material Handling Institute Inc. Average gain for the first five months is 18 per cent. One reason for the greater optimism: Record or near-record spending ahead for new plant and equipment.

More Freight Car Orders . . .

Even railroads are getting into the act. Predictions are for freight car buying at more than triple the 3100-per-month rate of the first five months. Buying plans announced by several roads in the last couple of weeks indicate that estimate won't be far off.

The car buying is in response to increased rail traffic. Carloadings to date are 8.7 per cent above a year ago's; the number of cars available is down about 50,000.

Continuing good traffic (and industrial activity) for the Great Lakes region, at least, is pointed to by the Regional Shippers Advisory Board's prediction of a 20-per-cent increase in carloadings in the third quarter.

Raw Materials for Steel . . .

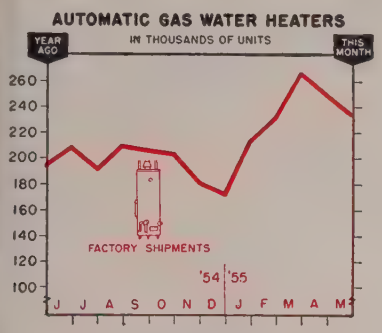
Across the nation, coke, coal and ore are leading the traffic upswing. Coke shipments are up almost 30 per cent from last year's; coal and ore, 17 per cent. It follows that coal production also is up, nearly 20 per cent, according to National Coal Association figures.

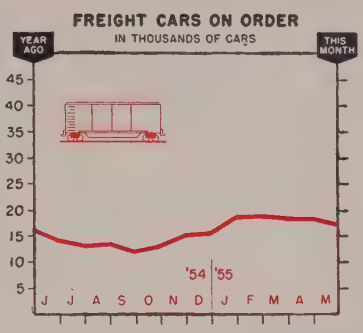
Locomotive backlogs made a small gain to 385 as of June 1, compared with 360 a month earlier. On Apr. 1, though, 428 were on order. But it's still more than double the 170 on order a year ago.

TV Set Makers Optimistic . . .

Radio and television set manufacturers and their component suppliers are optimistic about the outlook for black-and-white television receivers and radios.

"Guesstimates" taken by Radio-Electronics-Television Manufacturers Association go like this: In 1955, 7 million to 7.3 million black-and-white TV sets and 12.5 million to 13 million radios, includ-





	Shipments—Units		
	1955	1954	1953
Jan.	210,900	164,400	189,900
Feb.	228,400	175,000	194,200
Mar.	263,100	187,800	207,400
Apr.	245,200	200,800	209,500
May	230,400*	195,600	183,300
June	.....	206,700	181,200
July	.....	190,300	178,900
Aug.	.....	207,100	168,100
Sept.	.....	205,500	179,000
Oct.	.....	202,000	194,300
Nov.	.....	179,100	155,000
Dec.	.....	166,800	141,900
Total	.....	2,281,100	2,182,700

Gas Appliance Mfrs. Assn.
*Preliminary.

	Awards		Backlogs (end of month)	
	1955	1954	1955	1954
Jan.	5,087	2,942	18,395	27,959
Feb.	2,690	2,057	18,633	25,441
Mar.	2,156	348	17,974	20,966
Apr.	2,706	909	17,930	17,817
May	3,041	1,071	16,886	15,615
June	.....	1,139	.....	13,860
July	.....	883	.....	12,889
Aug.	.....	2,425	.....	13,013
Sept.	.....	2,396	.....	11,993
Oct.	.....	2,704	.....	12,853
Nov.	.....	3,754	.....	14,805
Dec.	.....	2,685	.....	15,317
Total	.....	23,313		

American Railway Car Institute.

ing 4.5 to 5 million auto sets.

In 1956, 6.5 million to 7.3 million black-and-white TVs. Record year to date for TV sets was 1954 when 7.3 million were sold. For color TV, consensus was for 35,000 sales in 1955, between 250,000 and 300,000 in 1956.

Business Is Good, Say PAs . . .

Another reporter of excellent business is the National Association of Purchasing Agents. For June, 36 per cent of the PAs report higher production, 33 per cent higher new orders.

While that's not a bad showing, it's still the lowest since last summer, indicating that the rapid rate of business pickup may be slackening. But reinforcing the view that business is good, only 7 per cent report production dips; only 14 per cent say new orders are down.

Another reason for optimism is a rising inventory level. It's needed to back up higher production and give a cushion of materials in tight supply like steel, copper and nickel. Employment is still climbing. PAs reporting additions to payrolls outnumber fivefold those reporting cutbacks.

Buying policy on production materials remains 90 days or less where possible. For capital additions, lead time is six months or more. Prices continue a slow rise, but tight competition has brought about lower than "book" prices on some items.

Trends Fore and Aft . . .

New orders for industrial supplies and machinery in May jumped to 191.6 (July, 1948=100), highest since the Korean War, reports the American Supply & Machinery Manufacturers' Association. Only in the first four months of 1951 have orders been higher . . . April sales of automobile replacement parts broke the dollar-volume record set in July, 1948, by 11 per cent, but physical volume was off 15 per cent. The Automotive Parts Manufacturers Association says a dip may come in two or three months. Sales have been on the upgrade for 13 months. They usually follow close behind retail sales, and they are on the way down . . . Metal weatherstripping sales in May were 29.5 per cent above the same month last year, reports the Weatherstrip Research Institute. Sales the first five months are 32 per cent over the like 1954 period.

• Edited by GEORGE BLACK

NEW SERIES OF HARDENABLE STAINLESS ALLOYS

A new series of corrosion resistant precipitation hardenable stainless steel alloys has just been announced by the Research Division of Cooper Alloy Corporation. Designated PH55A, PH55B, PH55C and PH20, the four new alloys are designed to meet the following needs:

PH55A—A high strength and high hardness alloy with fair ductility, for erosion and abrasion resistance or for stressed parts in corrosive applications.

PH55B—A ductile high strength alloy of medium hardness, for shock resistance and high stresses in corrosive applications.

PH55C—A very high hardness alloy of low ductility for non-stressed, corrosion resisting parts.

PH20 —A gall resistant alloy with superior corrosion resistance.

All three alloys in the PH55 series are variations of the 19% chromium, 9% nickel analysis. By introducing and varying molybdenum, copper and silicon and controlling the carbon below .08% and the manganese below 1%, variations in hardness and ductility are achieved. The corrosion resistance of these three alloys equals or surpasses that of type 316 stainless; average Brinell hardness for Cooper Alloy PH55A, B and C is 341, 293, and 415 respectively. Cooper Alloy type PH20 is a precipitation hardenable version of the 20% chromium, 29% nickel type 20 alloy which has unusually good resistance in hot sulphuric acid and superior resistance to a long list of corrosive solutions. Average Brinell hardness of 229 can be achieved with this alloy, as compared with 130 B.H.N. for the standard 20 type alloy.

The new series of alloys fills a much needed gap in mechanical and chemical properties between 17-4PH and Cooper Alloy V2B on the higher end. Patents are pending and the alloys will be made available on a license basis. Data on request.

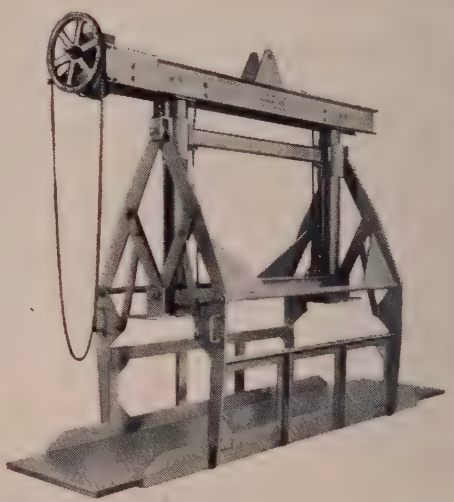
COOPER ALLOY
CORPORATION • HILLSIDE, N.J.

SPEED-UP YOUR SHEET HANDLING...
MAKE IT SAFER...REDUCE COSTS
with the new Heppenstall Sheet Lifter

This latest addition to the Heppenstall line of tongs has remarkable safety and ease-of-operation features that will save you both time and expense. Its design and construction solve many problems in sheet handling, and offer you these important advantages:

1. **No manual adjustment required for sheets of different widths.**
2. **Decreases sheet damage because of straight line motion of lifting arms.**
3. **Cannot lose load because of self-locking brake.**
4. **Available in hand or motor operated models.**
5. **Unlimited capacities.**
6. **End Grabs for use with very wide or very long sheets can be added as optional equipment.**
7. **Designed to fit any crane block and hook equipment.**

STRAIGHT LINE MOTION OF GRABS. There is no up and down arc . . . vertical members remain vertical and the lifting angle moves in and out parallel to the floor. This action greatly reduces the possibility of damage to the sheets.

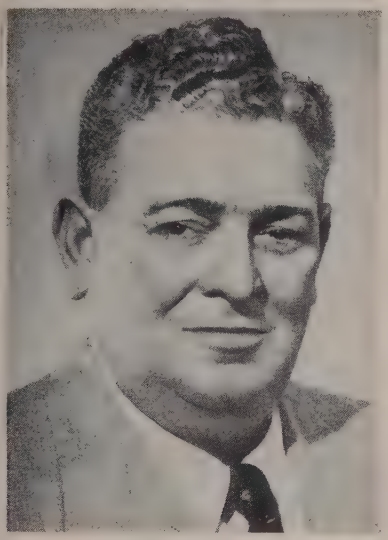


MANUALLY OPERATED SHEET LIFTER: Available with either chain or wheel operation.

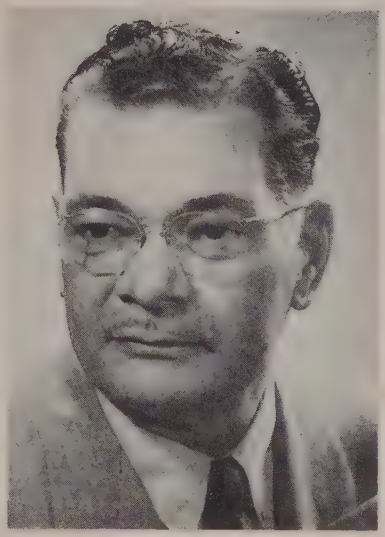
TONGS FOR EVERY LIFTING PROBLEM

HEPPENSTALL COMPANY

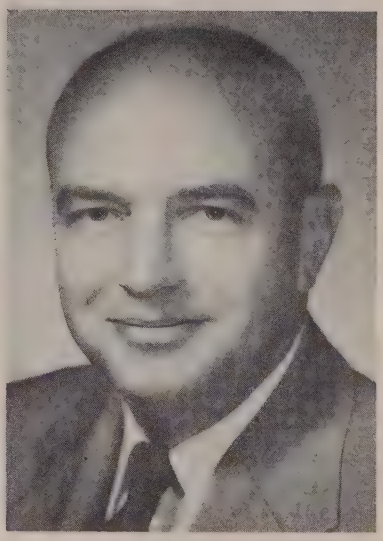
NEW BRIGHTON, PA.



CARL McFARLIN SR.
. . . Merritt-Chapman & Scott exec. v. p.



E. W. ADAMS
. . . to head a new Kaiser Alum. plant



H. EDWARD NEALE
. . . Bullard Co. sales manager

Carl McFarlin Sr. was elected an executive vice president of **Merritt-Chapman & Scott Corp.**, New York, in charge of the chemical, paint and metallurgical division. Mr. McFarlin is president and a director of Tennessee Products & Chemical Corp., Nashville, Tenn., which became a member of the M-C &S chemical, paint and metallurgical division following its recent acquisition by Merritt-Chapman. He continues headquarters at Nashville.

Keith G. Splude was made sales manager, brake division, **Stearns Magnetic Inc.**, Milwaukee. He was an application engineer at Louis Allis Co.

William Brown was made director of engineering, consumer products, **Webster-Chicago Corp.**, Chicago.

Ford R. Snyder was elected a vice president of **Hickman, Williams & Co.**, with headquarters in Chicago.

Chrysler Corp., Detroit, appointed **Melvin F. Auch** assistant general purchasing agent for administration, and **Gordon K. Price** assistant general purchasing agent for production.

George F. Groff was made secretary of **Crucible Steel Co. of America**, Pittsburgh. He succeeds the late **Kurt R. Vogel.** Mr. Groff continues as vice president-finance.

E. W. Adams was made plant manager of **Kaiser Aluminum & Chemical Corp.'s** new basic refractory brick plant soon to be constructed at Columbiana, O. **F. W. Wright** of the Henry J. Kaiser Construction Co. was appointed resident manager of the construction project, and now is headquartered in Columbiana.

Ellis J. O'Brien was made standard products sales manager for **Heyl & Patterson Inc.**, Pittsburgh. He was chief development engineer.

Arthur E. Peltosalo was made manager of specialty capacitor sales in the capacitor department of **General Electric Co.** at Hudson Falls, N. Y. He replaces **D. J. Harrington**, now manager of marketing for the appliance control department.

H. K. Porter Inc., Somerville, Mass., appointed **Harry M. Webster** sales manager of trade sales, in charge of cutter, pruner and automotive trade sales. He was sales manager, cutter and industrial division.

Gerald J. Halpin Sr. was appointed vice president-sales, **American LaFrance Corp.**, Elmira, N. Y. He succeeds **James O. Binford**, who was granted an indefinite leave of absence. Mr. Halpin was general sales manager.

H. Edward Neale was appointed sales manager of **Bullard Co.**, Bridgeport, Conn. Formerly assistant sales manager, he succeeds **Frank U. Hayes**, a vice president of the company, who was made assistant general manager.

Peters-Dalton Inc., Detroit, promoted **Robert G. Callison**, sales manager, to vice president in charge of regional sales and sales promotion. **T. Kenneth McGuire**, general manager of the industrial sheet metal division, was made general sales manager.

Beals, McCarthy & Rogers Inc., Buffalo, promoted **Robert E. Mills**, purchasing agent, to vice president. **Carl W. Gregory**, comptroller, was elected secretary.

Ahlberg Bearing Co., Chicago, appointed **Ernest J. Klimczak** general manager and **Melvin G. McGregor** sales manager.

James W. Tulloss was made general manufacturing manager of **Lyon Inc.**, Detroit. He is succeeded by **Harry J. Eyman** as production manager.

Hooker Electrochemical Co., Niagara Falls, N. Y., elected **R. Lindley Murray** chairman of the board to succeed **Edwin R. Bartlett**, who resigned to become chairman of the newly created finance committee. **Bjarne Klaussen**, former

M. T. O'DONNELL
. . . a Chrysler Division v. p.

RUDOLPH FURRER
. . . new position at ACF Industries

CHARLES B. GRACE
. . . to be president of Heintz Mfg.

executive vice president, was elected president.

M. T. O'Donnell was elected vice president, **Chrysler Division,** Chrysler Corp., Detroit. Since 1954 he has served as special assistant to the president, in charge of manufacturing and organization divisionalization. Before that, he was assistant general works manager of the division. **Clare E. Briggs,** who joined Chrysler Division last March as assistant to the president in charge of sales, was elected vice president-sales.

American Steel Foundries appointed **John A. Rassenfoss** manager of its manufacturing research laboratory at East Chicago, Ind. **C. G. Mickelson** and **P. J. Neff** were made assistant managers.

Joseph G. Hrosenchik was named South Bend, Ind., district sales manager for **De Walt Inc.,** subsidiary of American Machine & Foundry Co.

Detroit Steel Corp., Detroit, appointed **T. R. Adams** eastern sales manager at its Hamden, Conn., plant; **D. H. Mathews,** Detroit district sales manager; **R. T. Brown,** manager, Toledo, O., sales office.

Bruce D. Henderson, vice president of **Westinghouse Electric Corp.,** Pittsburgh, was appointed to the apparatus products staff. He is succeeded as general manager, purchases and traffic, by **A. M. Kennedy Jr.**

Rudolph Furrer, vice president of **ACF Industries Inc.,** New York, formerly in charge of the nuclear energy and special products division, was made vice president in charge of manufacturing and engineering of the parent company. He also becomes president of the Nuclear Energy Products Division. **John E. Angst,** district sales manager of **American Car & Foundry Division** of ACF, was elected vice president-sales, with headquarters in Chicago; and **Ellsworth B. Carpenter,** western sales manager, American Car & Foundry Division, was made vice president-sales, with headquarters in St. Louis.

Raymond H. Higgins was made sales engineer for **Portland Copper & Tank Works,** South Portland, Me.

Hartman Metal Fabricators Inc., Rochester, N. Y., appointed **Jerome L. Huff** sales manager. He was assistant sales manager of Mandeville & King Co.

M. O. Messenger was made vice president and general sales manager of **Koehring-Waterous Ltd.,** Brantford, Ont., subsidiary of Koehring Co. He succeeds **Donald M. Waterous** who resigned in 1954. Mr. Messenger, since 1953, has been at Koehring's main plant in Milwaukee as assistant sales manager, and also directed the distributor sales school in Milwaukee and in the field.

Charles B. Grace, vice president and secretary-treasurer of **Heintz Mfg. Co.,** Philadelphia, will become its president, effective Aug. 1. He will succeed **William J. Meinel,** who continues as chairman of the board, a post he has held since 1943. Mr. Grace will retain his post as treasurer, but relinquishes his post as secretary. **John H. Thacher,** manager of quality control, is his successor.

Carl Beltz was made manager of air conditioning equipment, **Star Steel Supply Co.** and **Burton Co.,** Detroit.

A. R. Schneller, Pacific Coast sales manager for the welding products division of **A. O. Smith Corp.,** was made eastern regional sales manager for the division. The corporation operates its eastern electrode manufacturing plant at Leola, Pa.

Butler Bin Co., Waukesha, Wis., elected **Kenneth P. Kerr** vice president-sales and **Morgan R. Butler Jr.** vice president-production.

Appointments at United States Rubber Co.'s **Naugatuck Chemical Division,** Naugatuck, Conn., include: **Earle S. Ebers,** general sales manager; **D. Lorin Schoene,** director of research and development; **F. Dudley Chittenden,** production manager. **Robert E. Casey,** former general sales manager, was made marketing co-ordinator. **C. H. Madsen,** former

Users of tubing for cylinder applications—now you can have this new...

J&L Cold Drawn ELECTRICWELD

Tubing with a Special Smooth ID Finish

Reduces your overall production costs in applications like these . . .

- **cylinder tubing**
- **hydraulic and pressure tubing**
- **shock absorbers**
- **ordnance components**

This new drawn-over-mandrel grade tubing with its mirror-like inside surface finish is today busy helping manufacturers reduce or entirely eliminate costly machining on many applications and is being substituted for more costly types of steel tubing. For example, it may be used, without inside honing, for many cylinders through which plungers are passed.

J&L Cold Drawn ELECTRICWELD Tubing with a *Special Smooth* ID finish combines the physical advantages imparted by today's modern electric welding techniques with those of cold working. It withstands high internal hydrostatic pressures, carries heavy torsion loads, resists high-frequency vibration, and offers a favorable weight-to-strength ratio for applications in which loading occurs in all directions.

J&L Cold Drawn ELECTRICWELD Tubing can be furnished in its three specifications in OD sizes from ¾-inch to 2¼ inches and in wall thickness from 20 to 10 gage, 0.035 and 0.134-inch respectively.

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THOMAS G. LEWIS
. . *Youngstown Sheet & Tube post*

H. JEROME OLSON
. . . *D. W. Onan & Sons v. p.*

WILBUR H. PETER JR.
. . . *Electric Controller & Mfg. v. p.*

production manager, was made product manager for chemicals and explosives.

Thomas G. Lewis was appointed assistant to the director of purchases at **Youngstown Sheet & Tube Co.**, Youngstown. He will supervise the purchases of special projects, including the larger construction programs.

J. Russell McGee was made manager of distributor sales by **Danly Machine Specialties Inc.**, Chicago. He was Midwest district sales manager for Skil Corp.

Earl Swanson was named cutting division manager, **Diamond Machine Tool Co.**, Pico, Calif.

Ohio Steel Foundry Co. appointed **Frank B. Stauffer** as its West Coast representative. His office is in Oakland, Calif.

Otto W. Franke was made manager of the new central production engineering department of **Chrysler Corp.**, Detroit. He was operating manager of the Dodge Division.

H. Jerome Olson was elected vice president - manufacturing, **D. W. Onan & Sons Inc.**, Minneapolis. Formerly production manager, he has been with the firm 14 years. In addition to manufacturing departments, he now is in charge of machine shop, assembly, stock and warehousing departments, as well as maintenance, procurement and purchasing, traffic and shipping.

F. Carroll Stille, sales manager, was elected a vice president of **Corhill Corp.**, Hoboken, N. J., subsidiary of Cornell & Underhill Inc.

Walter A. Barz, purchasing agent, **Calumet Division**, Calumet & Hecla Inc., Calumet, Mich., was appointed purchasing manager to succeed **L. H. Donald**, retired.

Jack B. May, former vice president, Benjamin Wolff & Co., was named manager of general products for **Production Steel Co. of Illinois**, Broadview, Ill.

Roger P. Filbert was elected president and chairman of **Oklo Industries Inc.**, San Diego, Calif.

Wilbur H. Peter Jr., formerly works manager, **Electric Controller & Mfg. Co.**, Cleveland, was elected vice president and works manager.

Adm. Alan G. Kirk, chairman and president of Mercast Corp., also has been elected president of **Alloy Precision Castings Co.**, Cleveland, following resignation of **Ronald D. Gumbert.** Admiral Kirk continues to serve as chairman of Alloy, a subsidiary of Mercast. **Frank W. Glaser** was made general manager, continuing as vice president.

E. E. Locke was made sales manager, Los Angeles warehouse division, **Caine Steel Co.**

L. W. Buechler was named chief engineer for **Vickers Electric Division**, Vickers Inc., St. Louis. He was manager of control product sales for the division.

Oliver A. Gottschalk was elected treasurer-controller, **Carborundum Co.**, Niagara Falls, N. Y. He is succeeded as assistant to the president by **George J. Zimmerman.**

OBITUARIES . . .

Hugh H. Glen, 57, president, **Johnson Pump Co.**, Pasadena, Calif., died June 16.

Fuller F. Barnes, 68, president and chairman, **Associated Spring Corp.**, Bristol, Conn., from 1923 until retirement in 1954, died June 18.

William I. Grantham, 67, operator of **Niagara Welding & Boiler Co.**, Niagara Falls, N. Y., died June 16.

Dr. Rufus E. Zimmerman, 68, retired vice president and chairman of the research policy committee, **United States Steel Corp.**, New York, died June 21. The American Society for Metals awarded him its medal for advancement of research in 1946.

Peter G. H. McInnes, 76, one-time president of **Hamilton Tool Co.**, San Diego, Calif., died June 14.

Reliance

SNAP RINGS

Save Man Hours

Money and Material

Now it's easy to position gears and bearings on shafts without resorting to countless hours of intricate and expensive machining operations. Nor do you sacrifice quality when you let Reliance Snap Rings do the same job on shaft assemblies, bearing applications and counterbores that formerly required many man hours and wasted materials.

Reliance Snap Rings form a solid shoulder able to withstand predetermined thrust loads simply by machining a groove into a shaft and snapping in a Reliance Ring. Compare this to the waste in time and materials of machining the entire length of the shaft to form a shoulder. Wherever it is practical from a design standpoint, Reliance engineers can show you how to save man hours, money and material by switching from expensive machining operations to Reliance Snap Rings. You will find more detailed information in our Engineering Folder 4K/3 which we will be happy to send at your request with no obligation.

1. Drill hole full length*
2. Recess groove in bore
3. Snap Reliance Ring in groove.
Internal shoulder is formed at fraction of ordinary cost. *Where seamless tubing is used, drilling is eliminated.

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"SPRINGLITE" AND "HOZ-FAS-NER" ARE REGISTERED TRADEMARKS OF THE EATON MANUFACTURING COMPANY

A ***BARGAIN***

THAT BY-PASSES

THE DISTRIBUTOR

IS NO BARGAIN AT ALL

In these times of mounting production costs, many purchasers of industrial supplies and materials are beginning to look upon their distributors as an extra expense. At first blush, it might *seem* cheaper to buy direct from the maker.

Actually, the distributor helps *both* the buyer and manufacturer save money. Like this:

He saves the buyer warehousing, handling and storage details, paperwork, provides an immediate single source of supply for thousands of items that industry needs, often in a hurry.

He saves the manufacturer the cost of heavy inventory maintenance in all parts of the country, the expense of an army of salesmen, a fleet of trains and trucks, and a staff of credit and collection experts. In a sense, your distributor represents a cooperative distribution facility that you share with all other firms in your area.

Next time you're tempted to get a direct quotation from the manufacturer, whether on a big or small item, figure out *all* the costs—not just the first cost—and you'll find you gain much more, yet in the long run pay no more, by utilizing the services of your distributor.

WICKWIRE ROPE

3151

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eneral Cable Expands

dditional facilities in Illinois, node Island and Canada will oost wire and cable supply

ENERAL CABLE CORP., New ork, has launched a major expan- on of manufacturing facilities to eet the growing needs for elec- ical and communications wire and able. It acquired a 100,000-sq-ft lant, is building a plant in Illinois nd is co-operating with Canadian nd British interests to create a ew company.

Providence Plant—Swiftest re- ults in the program are being re- alized by the acquisition of Gen- eral Insulated Wire Works Inc., Providence, R. I., maker of tele- phone wires, power supply cords nd cord sets. C. J. Craig, presi- dent of the firm, will be appointed vice president of General Cable, with chief responsibility for the Providence operation.

Illinois Project — By November, a 50,000-sq-ft plant will be com- pleted in Monticello, Ill., and will be in full operation by the year end. It will produce paper tele- phone cable at first and will be ex- panded later. This facility will in- crease General Cable's production of this type cable by about 25 per cent. R. E. Riggin, assistant plant manager at the firm's St. Louis factory, will take over the man- agement of the Illinois plant.

Canadian Firm — Telecables & Wires Ltd. has been formed as a joint venture of Canada Wire & Cable Co. Ltd., Telegraph Construc- tion & Maintenance Co. Ltd. and General Cable Corp. It will manu- facture a complete line of telephone wires and cables in a plant to be built in or near Winnipeg, Man.

Officers of the Canadian com- pany are: Chairman of the board, J. R. Bradfield, president of Canada Wire & Cable and executive vice president of Noranda Mines Ltd.; vice chairman, I. T. Bennett, chair- man of the board, General Cable Corp.; president, O. W. Titus; vice presidents, J. R. MacDonald and L. G. Lumbers.

Buys Hydraulic Equipment Firm

American Brake Shoe Co., New York, purchased Denison Engineer- ing Co., Columbus, O., manufactur- er of hydraulic presses, pumps and automatic controls. The property will be operated as a wholly owned subsidiary, with W. C. Denison continuing as president and chief executive officer. American Brake Shoe recently embarked upon a broad diversification program and has expanded its research activi- ties in the development of new products.

Stauffer Chemical To Build

Stauffer Chemical Co., New York, plans to build a multimillion dollar plant for the production of carbon bisulphide at Mobile, Ala.

Fastener Firm Changes Hands

Southco Division, South Ches- ter Corp., Lester, Pa., purchased the working assets of Lion Fas- tener Inc., Honeoye Falls, N. Y. Southco designs and makes indus- trial fastening devices.

Foundry Placed on Stand-by

The Pittsburg, Calif., Ordnance Steel Foundry (formerly designat- ed Columbia Steel Foundry) will be kept in readiness under terms of an Army-Ordnance contract awarded to U. S. Steel Corp.'s Co- lumbia-Geneva Steel Division, San Francisco. The division will pro- vide labor, services and equipment to lay away the foundry and its machinery. Restored at a cost of $6.5 million for government man- ufacture of armor steel hull cast- ings during the Korean War, the foundry will be able to resume production on short notice.

Scrap Broker Opens Branch

David J. Joseph Co., Cincinnati, opened an office in Gateway Cen- ter, Pittsburgh, under the manage- ment of J. D. Lieberman. The firm is a national broker of iron and steel scrap.

Newport Steel Expanding Mill

Newport Steel Corp., Newport, Ky., is constructing two ingot pre- heating furnaces. They're for the Wilder, Ky., plant section housing its new reversing hot strip mill. The facilities will complement the six circular soaking pits which service the hot rolling operation. Robert E. Harvey is executive vice president and general manager.

Hoffman Machinery Buys Firm

United States Hoffman Machin- ery Corp., New York, purchased Intercontinental Mfg. Co. Inc., Dal- las, manufacturer of aircraft com- ponents, tractors, farm imple- ments, busses, motor coaches, in- dustrial equipment and machinery. The firm operates plants in Gar- land and Brady, Tex. U. S. Hoff- man makes textile maintenance equipment, pneumatic conveying systems, centrifugal blowers and exhausters, oil filtration units, metal finishing and ordnance equipment. It operates several ordnance plants.

American Brass Builds Plant

American Brass Co., Waterbury, Conn., is erecting a $2.5-million plant at Mattoon, Ill., for the man- ufacture of flexible metal hose and tubing. A. B. Freeman is vice president in charge of the com- pany's American Metal Hose Di- vision. R. C. Donovan will man- age the Mattoon unit, scheduled for operation in January, 1956.

Parts Maker Adds New Line

Teer, Wickwire & Co., Jackson, Mich., purchased Lindberg Air & Hydraulic Cylinder Division from Lindberg Engineering Co., Chi- cago. The new operation will be set up as Lindberg Air & Hy- draulic Division of the Jackson firm, manufacturer of machined parts primarily for the automo- tive industry.

McKee Celebrates 50th Year

Arthur G. McKee & Co., Cleve- land, will celebrate its 50 years of service to the steel industry this fall. Having a hand in the build- ing of many of the nation's steel plants, its services include engi- neering, purchasing, construction and operation of steel mills. It also has a consulting service.

Since 1926, when it merged with Widdell Engineering Co., it has per- formed similar services for the pe- troleum, petro-chemical and chemi- cal industries. H. E. Widdell has

been president of McKee since 1946.

Ford Expands Ohio Facilities

Ford Motor Co., Dearborn, Mich., plans major expansion of its Walton Hills and Brook Park, O., plants at a cost unofficially estimated at $12 million. The company also will build a plant at Sharonville, O., for the production of automatic transmissions.

At the Walton Hills stamping plant, a 215,000-sq-ft addition (for storage) will enlarge that facility to 1.5 million sq ft.

At Brook Park, 300,000 sq ft of manufacturing space will be added to the present 562,000 sq ft of engine plant No. 2. The foundry will be increased by 70,000 sq ft. Six-cylinder engine production will be moved to the No. 2 plant. Plant No. 1 will be devoted to production of V-8 engines and plant No. 2 will continue making them. The plant addition will increase V-8 production capacity by 50 per cent.

The enlarged foundry will supply all castings for the two Brook Park engine plants and a portion of those used at the new plant at Lima, O.

The Walton Hills and Brook Park additions are part of a recently announced $625-million company-wide expansion program.

The Sharonville plant will be used in conjunction with the Automatic Transmission Division's facility on Red Bank road, Fairfax village, a suburb of Cincinnati. Both operations will be under the direction of John Lawson, manager of the Fairfax plant. The division's headquarters are in Livonia, Mich., where it also operates a manufacturing plant which is undergoing expansion.

Steel Container Plant Opened

United States Steel Products Division, United States Steel Corp., Pittsburgh, is fabricating steel containers at its new plant in Pennsauken township, near Camden, N. J. It will produce steel drums and pails for the petroleum, chemical, paint, food and other industries in the eastern seaboard area. Containers will range from 3.5 to 7-gal pails to 120-lb grease drums and 55-gal oil drums. Annual capacity is scheduled to be 2,379,000 drums and 3,200,000 pails, with 55-gal drums accounting for the largest tonnage. E. A. King is district sales manager, and C. I. Gibson is superintendent of the new plant.

Trailer Maker Plans To Build

International Trailer Co. Inc., Baltimore, manufacturer of custom trailers, will build a plant, containing 35,000 sq ft, on the Pulaski Highway.

Greist Buys Air-Marine Motors

Air - Marine Motors Inc. of Amityville, N. Y., and Los Angeles, has been acquired by Greist Mfg. Co., New Haven, Conn. Air-Marine makes fractional horsepower motors, fans and blowers. Its new officers are: D. H. Thomas, president; H. M. Greist, executive vice president; M. D. Vanderbilt, treasurer; J. B. Wolff Jr., vice president and assistant treasurer; H. G. Dowd, secretary. Greist Mfg. makes sewing machine attachments, photographic equipment and other precision products.

NEW ADDRESSES

Universal Electronics Co., manufacturer of electronic products, moved to 1720 22nd St., Santa Monica, Calif.

Wilton Tool Mfg. Co. Inc. moved into its new general office and factory building at 9525 Irving Park Road, Schiller Park, Ill.

Chicago Tramrail Corp. recently completed its office and service building at 1330 S. Kostner Ave., Chicago 23, Ill.

Acme Metal Spinning Co. moved into its new building at 2100 S. 57th St., West Allis, Wis.

Oswald Refractories Co. Inc. moved to larger quarters at 1617 S. Brentwood Blvd., St. Louis 17, Mo.

Salem-Brosius Inc. is in its new office building at Carnegie, Pa. Its mailing address, P. O. Box 2222, Pittsburgh 30, Pa., will reach George J. Hagan Division, Phillips Division, Hyla Process, as well as the parent firm.

ASSOCIATIONS

New companies elected to membership by the **National Screw Machine Products Association** Cleveland, are: Abbott Products Inc., Whitestone, N. Y.; Columbus Jack Corp., Columbus, O.; Economy Machine Products Co., Chicago; Mantel Screw Products Co., Milwaukee; Naugatuck Automatics Inc., Naugatuck, Conn.; Nutmeg Screw Machine Products Co., Wolcott, Conn.; Owen Mfg. Inc., Litchfield, Ill.

New companies and their representatives elected to membership in the **Investment Casting Institute,** Chicago, are: Brace Inc., C. H. Brace, Minneapolis; Illinois Precise Casting Co., R. J. Harvey, Chicago; Industrial Fine Castings Ltd., T. W. Morewood, Toronto, Ont.; A. P. Green Fire Brick Co., K. K. Breit, Mexico, Mo.

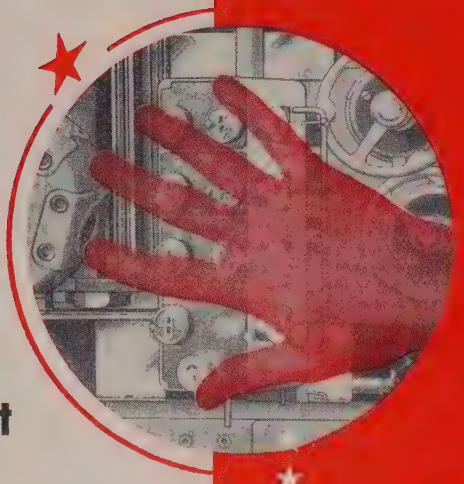
George F. Groff, Crucible Steel Co. of America, Pittsburgh, and E. B. Lee Jr., Latrobe Steel Co., Latrobe, Pa., were elected to membership in the **Controllers Institute of America,** New York.

Detroit Steel Products Co., Detroit, has been accepted for membership in the **Building Research Institute,** Washington. The company makes metal windows, doors, panels and roof decks. The institute is a part of the Division of Engineering & Industrial Research, National Academy of Sciences-National Research Council.

REPRESENTATIVES

Industrial Division, R. D. Werner Co. Inc., Greenville, Pa., appointed Carl A. Underhill & Co., Detroit, sales representatives for Ohio, Indiana, Illinois and Wisconsin. The company makes custom aluminum extrusions and roll-formed shapes in aluminum, stainless steel, carbon steel and other metals.

Within the Span of a Man's Hand



The power to transmit the commands of the operator to the machine . . . . . .

By means of the movable PENDANT CONTROL the start and stop of the spindle; selection of speeds, feeds and directional movements of all heads in feed or traverse are quickly and easily accomplished. Interlocks and a stopall stick provide safety for both operator and machine.

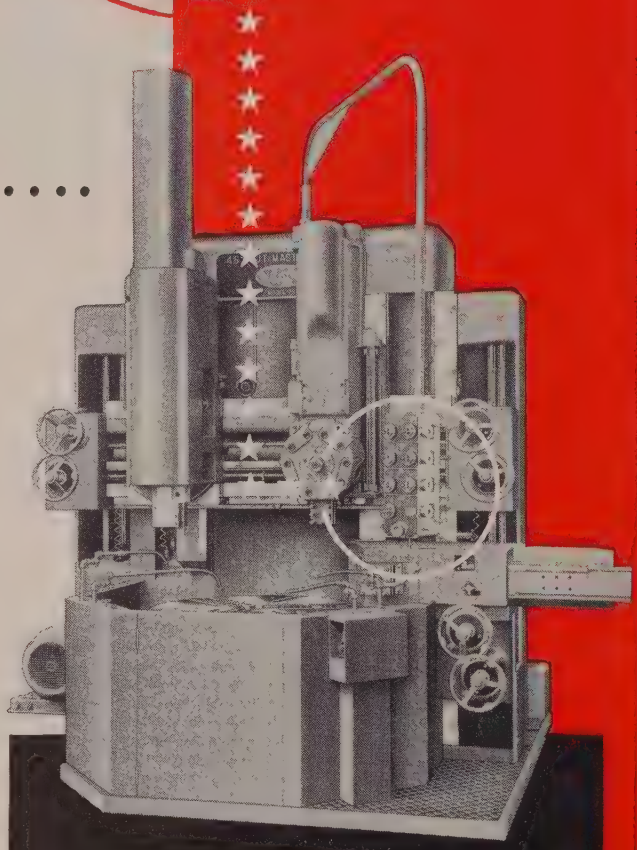
Additional features include:

SCREW FEED

for vertical and horizontal motion of all heads — to assure fine smooth finishes with greater accuracy.

POWER INDEXED MAIN TURRET (optional)

Five sided turret for "run of the mill" jobs. Four sided turret for production jobs.



CUTMASTER VERTICAL TURRET LATHE Model 75

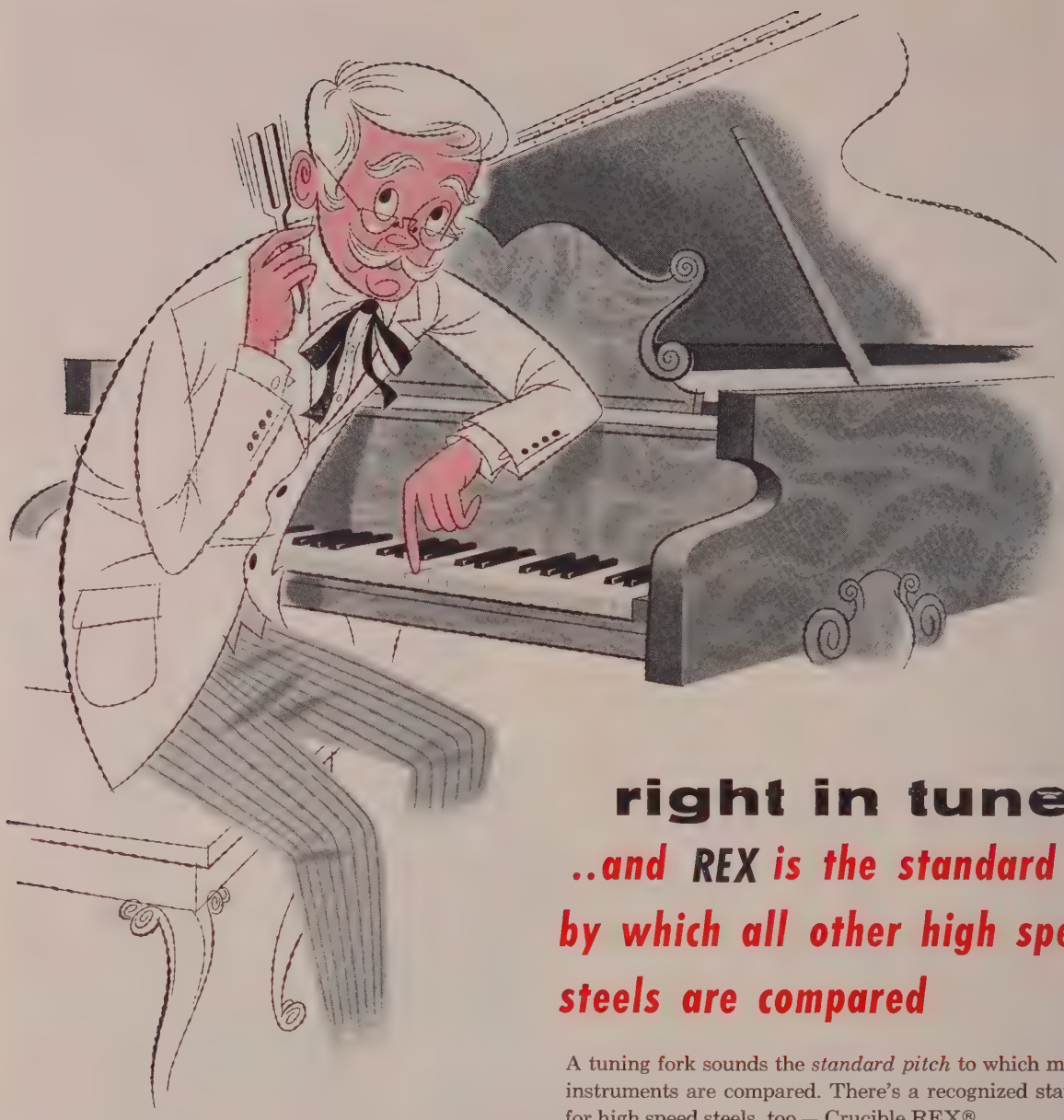
PLAN TO VISIT OUR EXHIBIT AT BOOTH 1213 AT THE N.M.T.B.A. SHOW, CHICAGO . . . .

SEVENTY FIFTH 1880 BULLARD 1955 ANNIVERSARY

THE BULLARD COMPANY

BRIDGEPORT 2, CONN.

AVAILABLE IN 26, 36, 46, 56, 66 AND 76 INCH SIZES



right in tune

..and REX is the standard by which all other high speed steels are compared

A tuning fork sounds the *standard pitch* to which musical instruments are compared. There's a recognized standard for high speed steels, too — Crucible REX®.

But don't take our word for it. Try REX in your own shop. Compare its structure, finish, hardenability, carbide distribution and general uniformity. Measure the *extra performance* you get. You'll see for yourself why no other tool steel outperforms REX . . . why it's the *standard for comparison* wherever high speed steels are used.

Next time you buy tool steels, be sure of top performance — specify REX. Remember, it's made only by Crucible — and is available from local warehouse stocks, or by prompt mill delivery. *Crucible Steel Company of America, Henry W. Oliver Building, Pittsburgh 22, Pa.*

CRUCIBLE first name in special purpose steels

Crucible Steel Company of America

Technical Outlook

PLATING TREND—As evidenced at the Industrial Finishing Exposition (Cleveland, June 20-23) the drive is on to bring automatic handling methods within reach of about every plating shop. Equipment builders say there's a large, almost untapped, potential in automatic equipment for the smaller shop. Machines that load and unload racks are getting into the automation picture. A few already are in operation.

HIGH HEAT PLATE—The American Electroplaters' Society met in Cleveland at the same time. R. W. Moeller, Pratt & Whitney Aircraft Co., told them that a nickel-cadmium diffused plate is being used to protect intricately shaped low alloy steel parts operating in jet engines up to 1000°F. To produce the corrosion resistant coating, parts are plated with 0.0003-in. nickel, followed by 0.0001-in. cadmium, then heated at 630°F for one hour.

RECTIFIERS ROLLING—All the germanium rectifiers displayed at the finishing show bear out a trend STEEL reported earlier ("Revolution in Rectifiers," Mar. 21, page 116). One company alone reports 6000 kw of germanium rectifiers installed and 5000 kw on order. A 600-kw installation for a 250-volt factory power supply is well beyond the talking stage.

ALUMINUM RIDE—Your automobile tires soon may contain aluminum yarn to cool the tread. The metal has excellent heat dispersal qualities.

HOT RACE—Running neck and neck in the race toward materials combining strength with oxidation resistance at high temperatures are cermets and coated molybdenum. We'll lick the brittleness of cermets, but we may get a satisfactory coating for molybdenum first, says Dr. Paul Schwarzkopf, president of American Electro Metal Corp. At the same time he pointed to development by his company of a method for coating large surfaces with cermets that gets these materials out of the pressed powder category.

TWO ROADS—Some precision casting problems may be solved by making small investment heats under a protective atmosphere. Melting stock which has been vacuum refined is used. For other alloys, best results are obtained only if either the investment heat is under vacuum or if refining and casting are done in one heat. That's what James H. Moore, general manager, Vacuum Metals Corp., Syracuse, N. Y., told the Investment Casting Institute in New York.

STRONGER MOLY—R. I. Jaffee, chief of Battelle's nonferrous physical metallurgy division, reports a method that gives greater hot strength to molybdenum up to 2000° F. Rupture strength at 1800° F is increased three to fourfold by dispersion of small amounts of suitable oxides (such as ZrO_2). Powder metallurgy technique is used.

BETTER TITANIUM—A new titanium alloy—tensile strength, 65,000 to 85,000 psi—uses aluminum in place of oxygen as a strengthener. A powder metal product, its advantages lie in improved impact strength (40 to 50 ft lb at room temperature) and a notched fatigue endurance ratio in the range of 28 to 32 per cent at 10 million cycles, says Clevite Corp.'s Brush Laboratories Division.

SAFETY SLEUTH—An indicator, about the size of a fountain pen, senses explosive gas. Its bulb glows dimly until contact is made with an explosive atmosphere. Then it blinks. The rate of blinking corresponds to the concentration of combustibles.

Metalworking Outlook—p. 29 Market Outlook—p. 99

BETTER MATERIALS HANDLING—1

Setting the Stage for Efficiency

By BYRON E. KENNEL
Assistant Editor

FORD planned its production layout. Then a building was fitted around it. The product, a new Louisville plant, is described as a single integrated machine. Plant and equipment work together.

The principles apply to any metalworking plant. A lot of research on plant layout and materials handling equipment was done by Ford to get the best design for new assembly plants at San Jose, Calif., Mahwah, N. J., and Louisville.

This article is the first of four which will present the highlights of Ford's research and experience as exemplified by the Louisville plant.

$$$$—A lot of dollars go for materials handling. Costs average 30 per cent of the production dollar; in some plants they hit 85 per cent, says Conveyor Equipment Manufacturers Association. On the average, 50 tons of material must be moved to produce 1 ton of product.

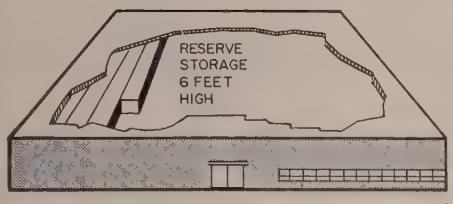
The most expensive dollar you may ever spend is the one that buys the wrong handling apparatus. A fresh look at basic ideas is needed—new equipment changes the use of fundamentals.

Where To Start—Materials handling methods should determine the design of plant facilities. Once a plant is up, it will influence the choice of handling equipment.

The volume and nature of the product determine the productive machines. The arrangement of the productive process depends upon the equipment selected to move materials. The flow of materials is the core of plant layout.

This is the first of a series of articles on better materials handling. Following articles will cover module units, storage and receiving and the lift truck-tow train team. Extra copies of each article are available in quantities of one to three until the supply is exhausted. Write Editorial Department, STEEL, Penton Bldg., Cleveland 13, O.

Save Money . . . Stack 'em High



(A) 2,047,284 sq ft

(B) 1,383,300 sq ft

Building A requires 663,984 additional sq ft to store the same amount of material as B. Additional building cost—over $6 million.*

*Estimated by STEEL

Ford's new Louisville plant is represented by B. Building size was held down by using tier racks and taking full advantage of the 18-ft air space for reserve storage. If stock were stored only to the average man's reach, the building (as at A) would have to be almost 50 per cent larger.

Planning the handling system must be done along with planning for equipment, facility and stock placement to get a smooth flow of materials and an economical balance between manpower and equipment.

Do's and Don'ts—Determine the space needed for plant operation after production tools are selected. Don't set aside space for storage until you know how much space you need. Figure rail and truck unloading needs from the material shipments that will come in. Lay out main aisles after the materials handling system is chosen.

At Ford in Louisville, 85 per cent of shipments come by rail, 15 per cent by truck. The number of unloading spots needed was estimated by charting the volume of material received by rail. A standard car unloading time, plus 4 hours for switching, was used. The number of unloading spots needed determines the length of the unloading dock.

Proper distribution of heavy unloading spots along the dock will give a straight line flow from unloading to storage to use point. To do this you must determine the volume of material movement from the rail dock to each department. Elimination of aisle bottlenecks and crosstravel on the unloading dock is a vital factor in efficient plant operation.

Dimensions—A minimum dock width of 30 ft was established by the traffic pattern and operations required on the Louisville dock. This provides 15 ft of working space for unloading and a 15-ft traffic aisle.

A rail spot study will indicate the location, length of travel and number of bridge and bay cranes.

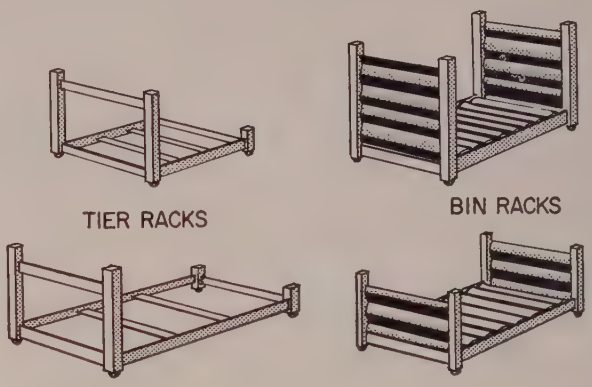
For Trucks — A similar study gave the number of spots and the type of unloading platform needed. In locating the truck dock, the shortest average flow of materials for the majority of parts is the goal. However, this flow must be studied in relation to the flow from the rail receiving dock to make sure no interference points are created.

Dock facilities, size of dock, dockboards and height of dock must be planned for fork truck

Check List for Management

1. **To get a clean and orderly plant—demand it from supervision.**
2. **Encourage use of recommended materials handling methods.**
3. **Enforce proper use of materials handling equipment.**
4. **Make an occasional systematic review of the zoning of foremen and equipment, Workloads change.**
5. **Help the complainer solve his own problems.**

All parts, 9000 of them, at Louisville are stored and handled in racks and module units. Next week's issue of STEEL will describe the latter.



movement. At Louisville, 4000 and 6000-lb fork trucks do the unloading.

The trailer train is well adapted to planned unloading methods. Its use affects production layout and stock placement. Main aisles should be 15 ft wide, aisles through which materials move should be at least 12 ft wide.

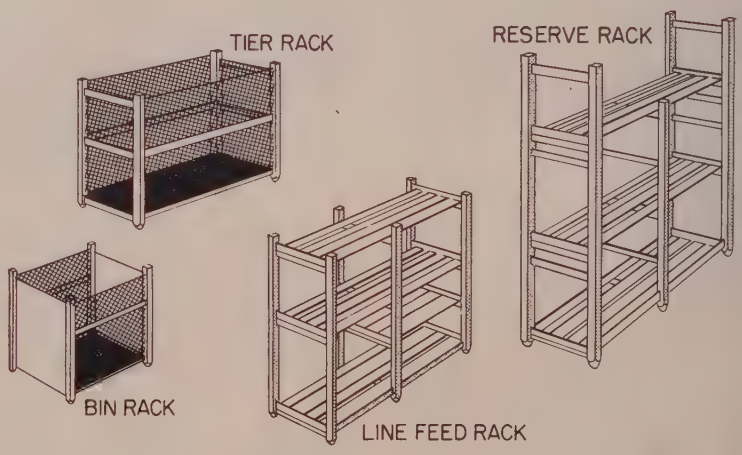
At Louisville, receiving and unloading docks require 13.5 per cent of the total floor space; aisles, 18.7 per cent; storage, 17 per cent.

About 7 miles of conveyors are in use. Where fluctuating stock floats and the frequency of layout changes place an economic barrier on using fixed storage conveyors, tier racks are used. They conform to the unloading and movement pattern and afford versatility and flexibility.

Five Factors — Determining stock storage space are: Production schedules, receiving quantities, shipping containers, material floats and ceiling heights. At Louisville, Ford had to learn the physical characteristics and assembly sequence of 9000 parts. A storage container is assigned to each part.

Stock storage space in the plant is divided into two categories—reserve and line feed.

Wire - enclosed tier rack provides a container for bulky items. The wire-enclosed bin holds small dense parts. Semipermanent racks replace the multitude of odd-sized, angle-iron racks usually found in a plant.



Line feed storage is material accessible to the production operator; reserve storage is material that must be brought to him.

Rules of Thumb—Minimum area requirements for line feeding are: For unit loaded material, carry the minimum of a 4-hour supply of each part. For hand handled material carry at least an 8-hour supply. Most practical line feed storage depth is 10 ft. When it is impractical to have 4 hours of stock next to the production line, a special line feed backup area may be created nearby.

Reserve areas vary in depth and length; full utilization of air space is basic in planning reserve storage area requirements.

The key to mass production is efficient mass movement of material. Fork trucks, tow tractors, pallet trucks and grip couplers form the backbone of the mechanized equipment at Louisville. Each has its own design characteristics. Only in performing intended functions is the top efficiency of equipment gained.

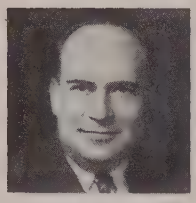
Versatility of the walking type, grip coupler has been increased by modifying the design to permit the operator to ride. It pays off in increased efficiency where there is continual movement of from 50 to 100 ft.

Ford's Selection—At Louisville, fork trucks that stack right up to the 18 ft trusses are used. Ford selected lift trucks powered by liquid petroleum gas. A low mast truck for highway trailer unloading saves time and, combined with the trailer train, makes a good team for keeping unloading docks clear.

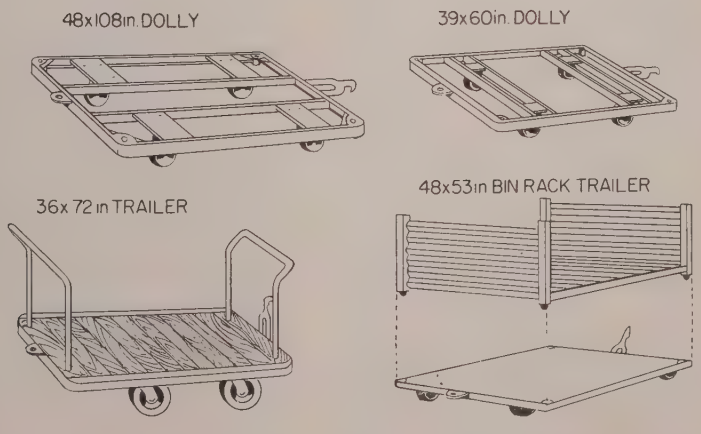
Standard times applied to the unloading, storing and line feeding of material by fork truck give the number of trucks needed. A detailed study of the movement of material down each aisle will establish the quantity of rolling equipment and aisle width required for servicing each department.

A helpful addition to rolling equipment is a solid deck bin rack trailer. It handles a bin rack with a capacity load and also makes an excellent carrier for heavy 48 x 48 in. expendable pallets that have a tendency to break on a 36 x 72 in. general-purpose trailer.

"Materials handling is one of the most lucrative areas for cost reduction," says D. S. Harder, vice president-manufacturing, Ford Motor Co.



"Human muscle costs $10 per horsepower-hour. Electricity is 4 cents or less," states R. C. Sollenberger, executive vice president, Conveyor Equipment Mfrs. Assn.



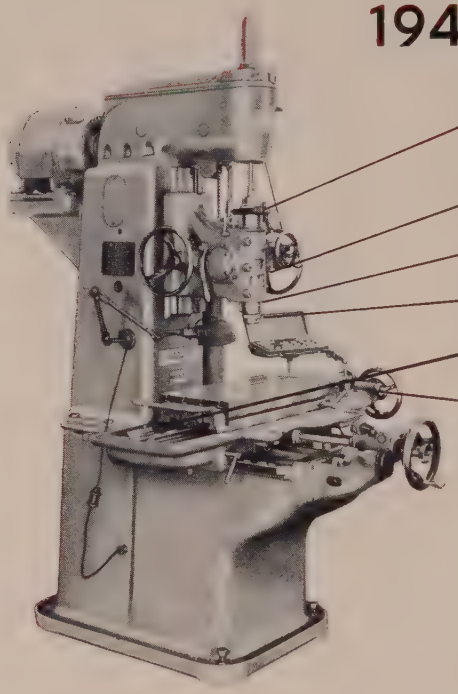
Trailer trains move 3150 tons each day

MACHINING . . . 1955

DRILLING and BORING

This is the fourth in a series of articles on Machining . . . 1955. The first three covered turning, milling and forming. Others will be on planing and grinding.

• Extra copies of this article are available in quantities from one to three until supply is exhausted. Write Editorial Department, STEEL, Penton Bldg., Cleveland 13, O.



SO FAR, drilling has been unable to get on the carbide band wagon —the tool material that has enhanced all of drilling's sister machining operations.

Forced to meet the same challenge (faster production), drilling has had to turn to other quarters.

The Answer—Here, production must be jumped by easier handling, more automatic functions, more multiple drill heads, improved fixtures and redesigned machines that hold down time to a minimum.

On both the standard drilling machines and those built for special-purpose high-production work, this often means that more of the responsibility for the operation is being assigned to the machine, less to the operator.

Radials — The horsepower and rigidity of radials have been upped to insure better performance at the drill point. New models have speed and feed preselectors to further cut manipulation time. Automatic positioning tables improve the cycle times on radial jobs.

Many functions of the radial are now powered, many pushbutton operated. New radials, with inbuilt accuracy, can do a surprisingly good job on tight-tolerance boring jobs.

Speeds—While drill speeds have not changed significantly, available speeds on machines have. Builders are offering a wider selection of speeds. You have a better chance of getting the speed for any drill operation that gives peak drill performance and life.

Double Duty—In putting more automatic handling, work locating and controls to work, machine builders and users are caught between two trends. One is to give the machine the shortest possible cycle to get peak production. This spells single-purpose, highly automatic machines.

The other trend is toward more versatile machines that can adapt to new parts or to redesigned parts without leading the user into excessive conversion costs.

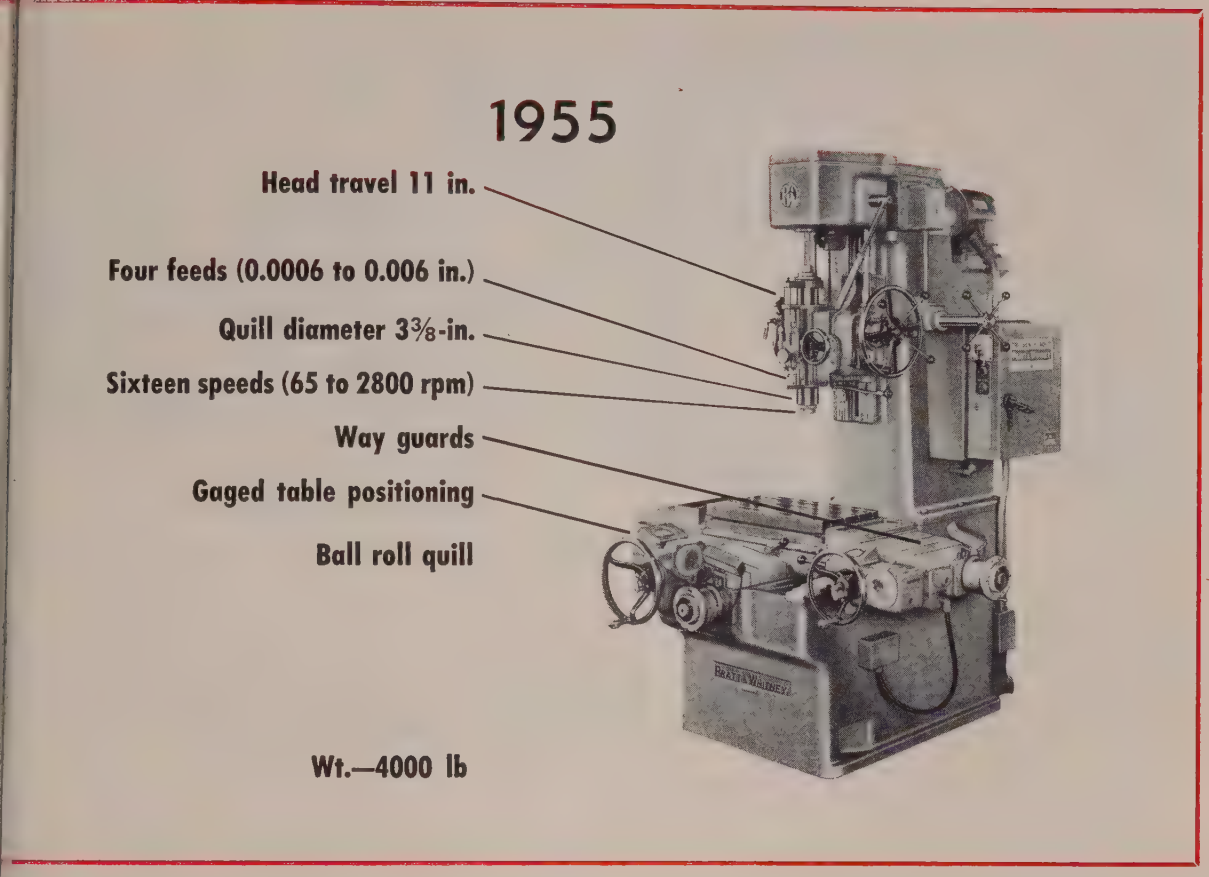
As one builder puts it: "We must be sure that our machines can be put on a brand new job with not more than a 15 to 20 per cent loss of equipment."

Another builder, pointing up the importance of versatility, emphasizes that a minor change in part design can cost the user thousands of dollars in new equipment. This, he feels, must be considered in the purchase of new equipment.

On the Spot—Another important trend in drilling has new machines positioning the workpiece automatically. Positioning devices take advantage of precision gages and automatic table feeds. They reduce set-up time to a fraction of what it is with hand positioning. At the same time, they reduce the complicated tooling and fixtures to a minimum.

Quick-change and preset tools are musts for many high-production drilling jobs. These, too, reduce down time, keep the machine at work.

Boring—Drilling and boring are subject to about the same trends. There's one important difference: Boring has been able to capitalize



n the high-speed potential of carbide cutting tools.

Better cutting tools, plus greater rigidity of the machines, has boosted potential speeds by as much as 100 per cent on some jobs.

No Sweat—On boring equipment too, the nonwork part of the cycle has been sliced. One new jig borer has 95 per cent of its functions controlled by pushbuttons. This includes all the feed and speed changes, clamping, rapid traverse and positioning to plus or minus 0.0001 in.

This substitutes for tedious and time-consuming hand manipulation by the operator — reduces the chance for operator error.

Versatility—Almost all the dozen makers of boring machines contacted recently by STEEL cited versatility of equipment as one of the most important trends in their field. One said the development of this type equipment constituted his "biggest single challenge."

A Heald precision boring machine, for example, performs 109 finishing operations on nine different aircraft instrument parts. This is done with 27 different tool blocks. Operations include boring, chamfering, plunge facing and generated facing.

Idea Source—Full-scale automation is playing a big part in the development of new ideas for both drilling and boring. One new machine works on two different, but similar parts without any operator adjustment. Probes on each head detect which of the two parts is in position; then tell the head whether it is to operate.

Another new machine, unannounced, is controlled electronically. It has two telephone dials which are used to establish the position of the tools.

Feed Back—The principle of letting the performance of the machine control its cycle will become even more common. To maintain peak production and, at the same time, keep close check on tolerances, automatic gaging checks completed parts and feeds back information to the machine.

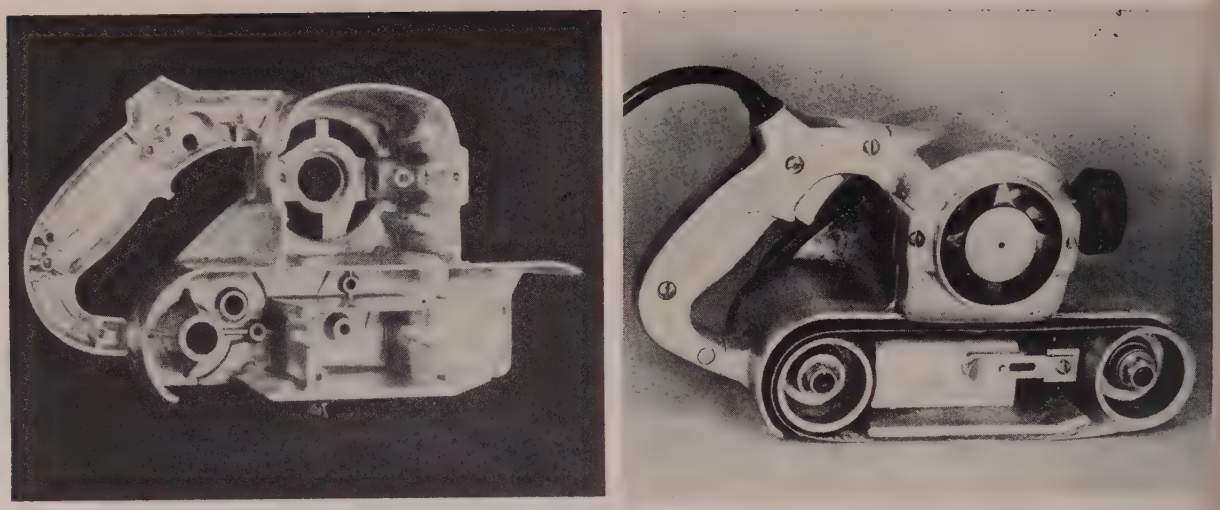
This information can be used to adjust tool settings. It can be used to stop the machine after a given number of cycles if work is still out of tolerance.

Metal Saver — Trepanning has made a sizable dent in the drilling field. The operation takes full advantage of carbide cutting; it also leaves a core of metal that can be used.

Trepanning has a practical limit on hole size—roughly 1½-in. in diameter. Smaller holes should be drilled.

Carbide's Future — Carbide-tipped twist drills work on cast iron, cast steel and nonferrous metals. So far, they have not been able to tackle steel.

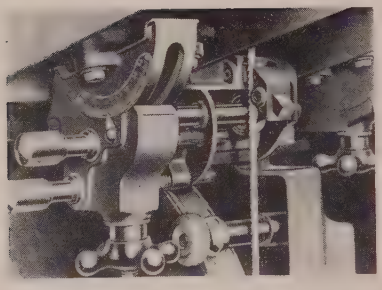
The problem is inherent in drilling: The cutting speed at the center of a twist drill approaches zero surface feet. It becomes less a matter of cutting metal, more a matter of burnishing. With high stress and no cutting at that point, carbides don't fill the bill. Many innovations have been tried, but there seems to be little that can be done to overcome all problems.



Key to the light weight of this power belt sander (right) is its diecast aluminum housing (left), a combination handle, motor housing and belt frame

DIECASTINGS:

Natural for Home Tools



Under-the-table view of this power band saw shows diecast zinc trunnions, control handles and bracket mounted between trunnions on the machine's main frame

INDUSTRIAL TOOLS must meet critical specifications to maintain a heavy work schedule. But the machines are handled by skilled operators and have the advantage of continuing maintenance programs.

The do-it-yourself workshop operator—semiskilled or unskilled—may ignore preventive maintenance of a machine and subject it to unpredictable abuses. In addition, the home workshop operator wants a lightweight tool.

How—Recognizing this, designers are incorporating zinc and aluminum diecast parts in many of the new models of machine tools for home and factory. The parts have high impact and tensile strength, are cast to close tolerances, are light and have an attractive appearance.

Manufacturers find, too, that one-piece construction, inherent in the diecasting process, is saving them production and assembly costs.

Power Belt Sander—A 3-in. belt sander, made by Porter-Cable Machine Co., Syracuse, N. Y., duplicates many of the features of heavier industrial equipment, yet weighs only 10 lb. A diecast, 380-aluminum-alloy housing serves as handle, motor housing and belt frame. Thin walls separate each section of the one-piece casting, which is cored for assembly of the motor, bearings, gearing, switches, drive linkage and wiring.

By specifying a diecast housing, the company eliminated machining operations required in other production techniques. This cut in production costs enables Porter-Cable to offer the home workshop enthusiast a full-size belt sander at a moderate price.

Band Saw—A 14-in., wood-cutting band saw, made by Delta Power Tool Division, Rockwell Mfg. Co., Pittsburgh, utilizes zinc diecast trunnions, handles and bracket.

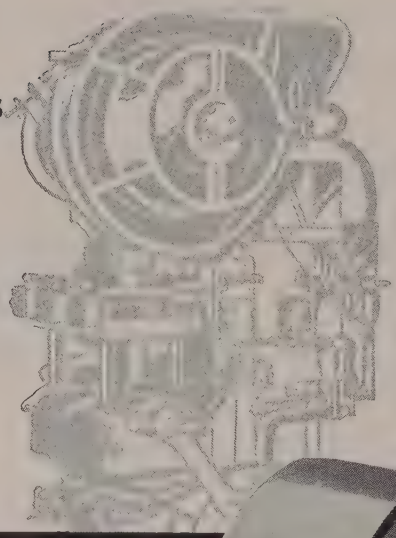
The saw's work table is adjustable, tilting 45 degrees right and 10 degrees left, with a positive stop at the level position. Two diecast trunnions make this adjustment. A diecast handle is attached to each trunnion's controlshaft. Also part of the adjusting mechanism is a diecast bracket, mounted between the trunnions on the machine's main frame.

For Accuracy—For blade control, Delta uses two diecast blade guides. This insures upper and lower blade support for accurate work while allowing the blade to run free.

In addition to these components, a one-piece, diecast lamp shade is used on this machine and other Delta equipment. These castings are of high-purity zinc alloy (ASTM AG-40A, SAE 903, Federal Spec. QQZ-363A).

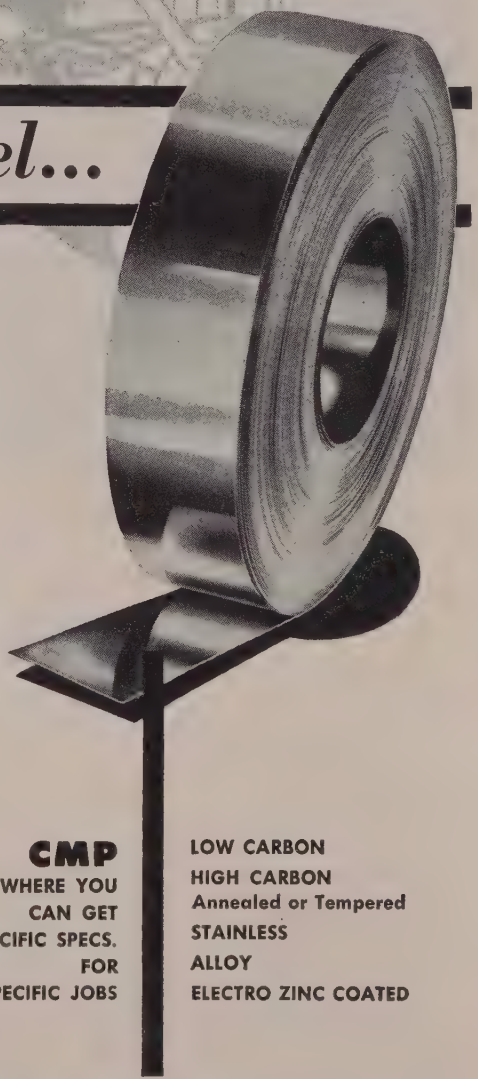
KE REVOLUTIONARY COST CUTTING PRESSES

that operate with near-human dexterity, superhuman accuracy, speed and endurance and minimum human effort and attention to produce better products faster and more economically . . .



CMP

cold rolled strip steel...



can help reduce your manual costs!

CMP's precision processing methods hold oversize width and gauge variations within exceedingly close limits (even as fine as 5″ ± .003″ x .067″ ± .001″ if required), resulting in . . .

. . . top parts yield per ton . . . more feet per coil . . . fewer production interruptions for coil replacement on automatic feed operations.

. . . less wear on dies . . . fewer die changes and "regrinds."

. . . easier fitting and assembly . . . fewer "oversize" rejects . . . less tedious "resizing" to make oversize parts fit.

More important . . . in many cases, CMP Cold Rolled Strip Steel can be processed to restricted physical specifications to facilitate, consolidate or even eliminate labor-consuming production operations and handling. Often, a simple specification change can do as much or more to reduce manual costs than expensive new equipment.

A qualified CMP representative will be pleased to check your flat-rolled material specifications and fabricating processes with a view to developing restricted specifications that will cut your end-product costs.

CMP
WHERE YOU CAN GET SPECIFIC SPECS. FOR SPECIFIC JOBS

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HIGH CARBON
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STAINLESS
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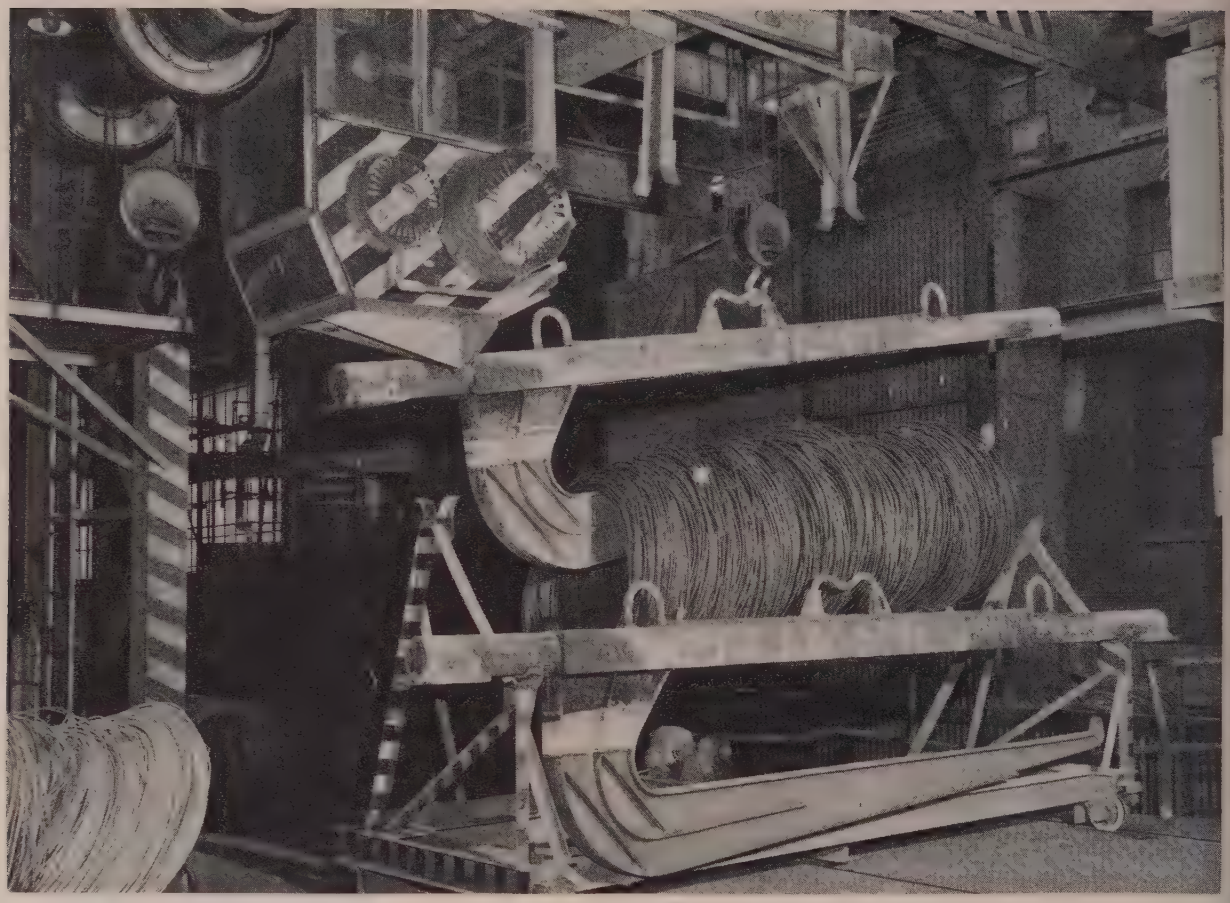


Monel hooks and straight through system add up to . . .

Pickling at Half the Cost

By GEORGE S. SHEPHARD
Chief Engineer
Pittsburgh Screw & Bolt Corp.
Pittsburgh

A NEW pickling line at the Pittsburgh plant, Pittsburgh Screw and Bolt Corp., reduces man-hours per ton by 80 per cent and increases production 30 per cent.

The plant, one of the world's largest for making bolts, nuts and rivets, has a single-shift production capacity of 3000 tons a month.

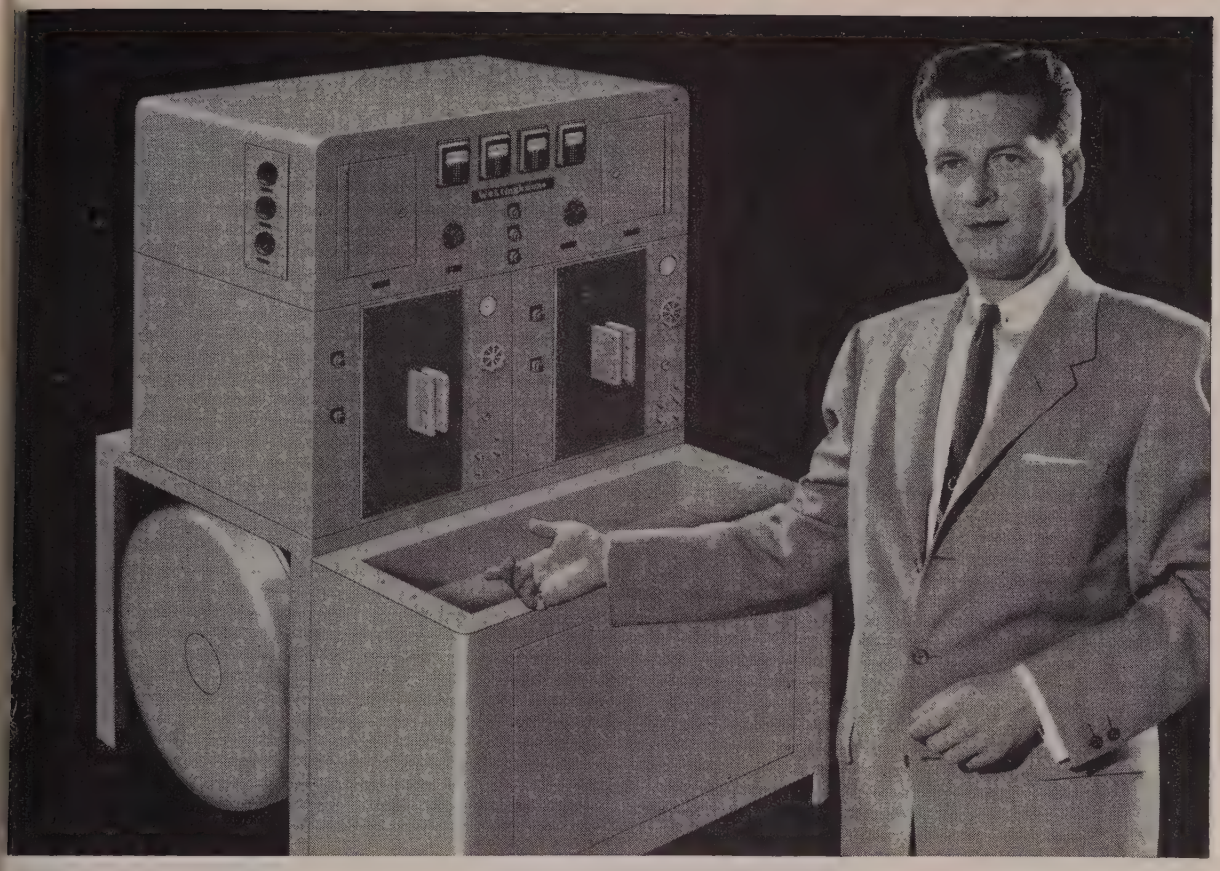
No Changeover Loss—The new pickling line was put in during a two-week vacation period. With one shakedown run on a Sunday morning, it was open for work the next morning.

Mostly coil and bar stock are pickled — the company handles about 75 per cent more coil than bar stock. Ten huge pickling hooks, believed to be the largest, carry coils through the operation.

They're Big — Each hook is 18 ft long, with the usable part measuring 13 ft. The header support at the top is an iron pipe with two ship-channel stiffeners. Hooks weigh 2900 lb each, 1000 lb of it being Monel. Work load is 6000 lb each. Under full load the hook deflection is only 2 in., header deflection ½-in.

The line has three coil tanks (where hooks are used) and two bar tanks. Eventually, bar tanks are expected to be eliminated, and perhaps more coil tanks will be put in. Tanks are 15 ft long, 10 ft wide and 7 ft deep. The liquid level is kept at 6 ft, and each tank will hold two of the Monel hooks, each bearing 6000 lb of coil.

Old Way—The only alloy used was in the chain that was looped through coils. Capacity was only 200 tons per day, and it took three men—two chain handlers and a crane operator. The new system



Westinghouse announces . . .

New induction heater designed for easier conversion

Building-block design of the new Westinghouse 30-kw induction heater permits 32 regular combinations for your low-power applications, plus a number of special arrangements. It provides the kind of flexibility and convenience you need to keep abreast of your constantly changing production setups.

Versatile—you get custom-built installation of standardized equipment to handle a wide range of applications. Unit ideal for hardening, annealing, brazing or soldering.

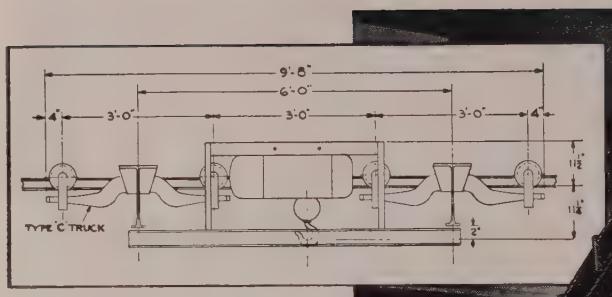
Easy to Use—front of worktable, free of controls, can be used for mounting work-handling equipment. Instruments at eye level for easy readability. M-G set readily accessible without removing panels. Buy the equipment you want, adapt it when your needs change: single to two-station operation—sink to bench top—high-voltage to low-voltage output—grouped as a compact unit to remotely located output stations.

Equipment consists of four basic units: (1) 30-kw, water-cooled, 10,000-cycle M-G set, (2) generator control cabinet, (3) high-frequency output cabinet, (4) work table.

For more information about improving your induction heating operations, call *The Man With The Facts*—your Westinghouse sales engineer. Ask him for your copy of booklet B-6519, or write Westinghouse Electric Corporation, 3 Gateway Center, Pittsburgh 30, Pa. J-02297

YOU CAN BE SURE...IF IT'S

Westinghouse



Lifting this three-ton condenser and moving it about is made an easy one-man job with the Tramrail crane.

HIGH LIFT UNDER LOW ROOF *Solves Handling Problem*

A double-girder, high-lift Cleveland Tramrail crane proved the solution of a handling problem at The Refrigeration Engineering Co., Los Angeles, Calif., manufacturers of evaporators and condensers of all sizes up to 100-ton rating.

Because many of their units are high and heavy, and the roof is very low, it was necessary to develop a special crane design that permits utilizing space between the crane girders. How well this was engineered is evidenced by the fact that while the distance from floor to the low part of the roof truss is only 11'-10¼", the hoist hook can be raised 10'-0" above the floor.

The crane and hoist are motor-driven, push-button controlled. The trolley is hand-propelled. The hoist has a capacity of three tons and travels at 18 feet per minute.

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BOOKLET No. 2008. Packed with valuable information. Profusely illustrated. Write for free copy

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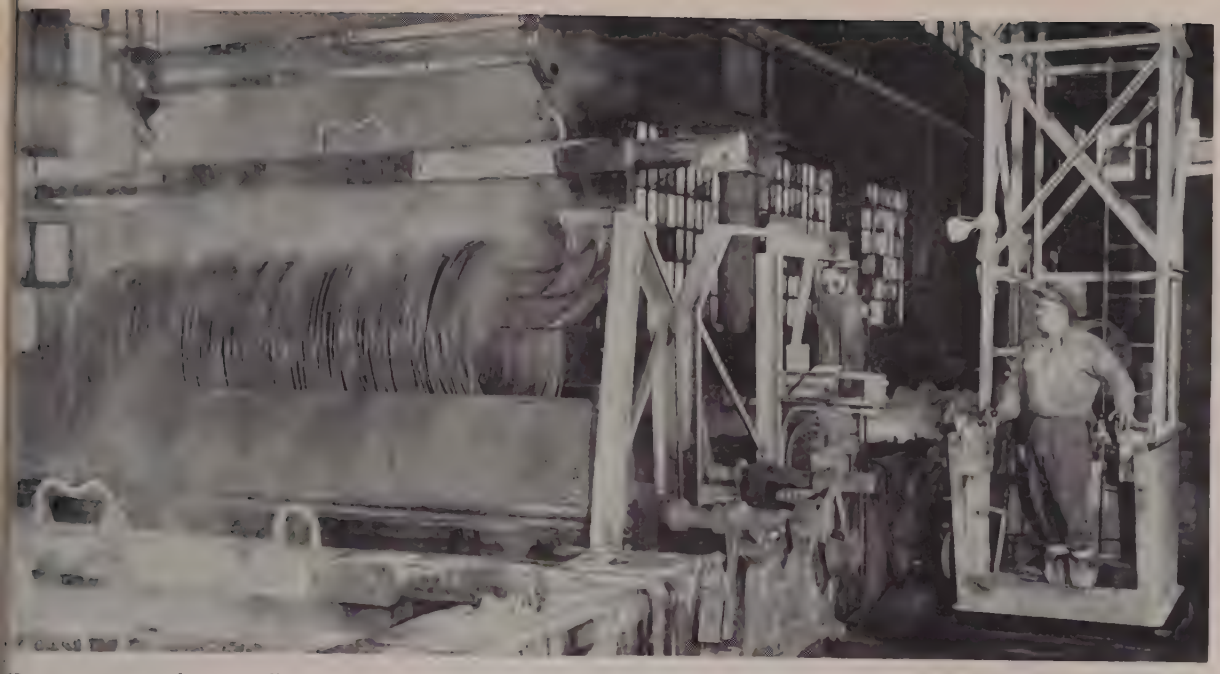
OVERHEAD MATERIALS HANDLING EQUIPMENT



Crane operator has excellent vision for moving loaded hairpin hooks anywhere on the line. Left foreground shows two hook loads in acid

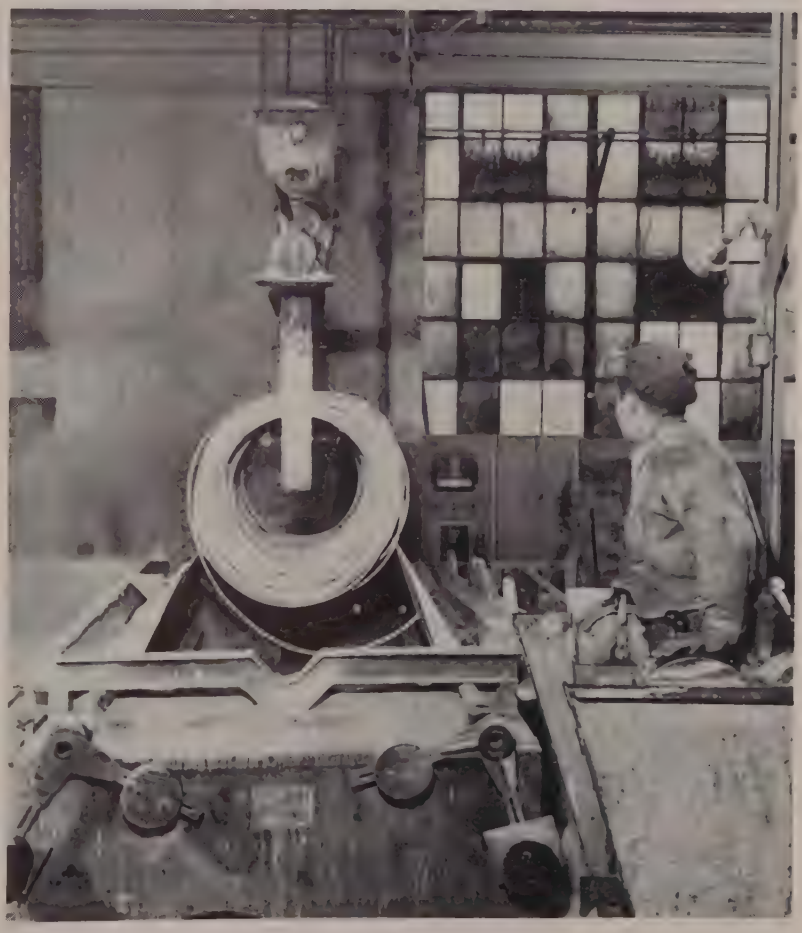
alls for only a crane operator.

Higher operation and maintenance costs were the main disadvantages of the old system. Extra man-hours were tied up in inferior materials handling. Production schedules were not met, and there was considerable downgrading of product.

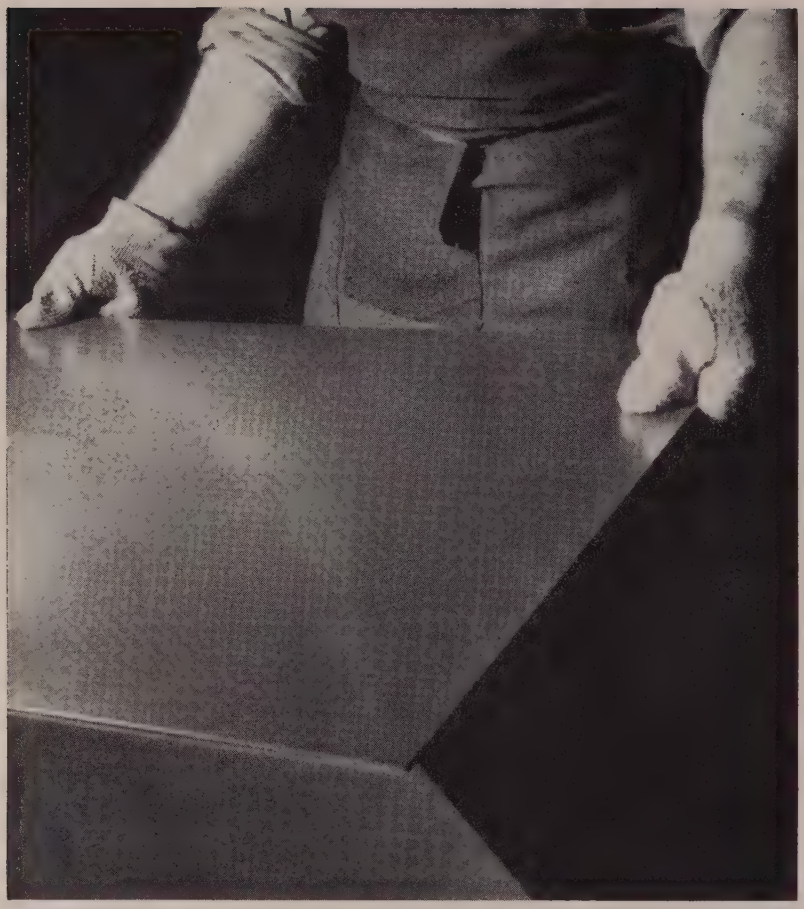
New Cycle—Two 6000-lb loads of coils go through every 30 minutes, progressing through acid bath, rinse, lime dip and baking steps. This means 6 tons an hour, or a possible capacity of 264 tons a day. Each Monel hook is suspended in the acid solution about three times each day.

The hooks are subjected to an 8 to 10 per cent sulphuric acid solution at pickling temperatures of 180 to 185°F. Their life expectancy is well over five years. After nearly two years of constant use, there is no sign of deterioration. Other than routine inspection, no maintenance has been required.

Aside from cutting pickling costs in half and increasing production 30 per cent, product quality has been upgraded. There is less damage from handling since the coils are never removed from the pickling hook from the time they leave the raw materials section until pickling is completed.



Last step in the line is a 5-minute bake to thoroughly dry the lime coating. The same Monel hook carries this load through the entire line



Accident studies show that . . .

Hands Are Safer in Gloves

DO YOU know that work gloves can reduce hand injuries in your plant by one-half?

That sort of safety record is possible if you furnish your employees with gloves, says Jomac Inc., the Philadelphia glove manufacturer.

The reasons: Companies can make sure that their men use the best glove for fullest protection, and replace worn gloves promptly.

Some companies prefer to charge their employees a small part of the glove cost—perhaps 25 per cent. That way, the employee has a stake in ownership and won't be prone to throw still-useful gloves away.

Economics—What does such a program cost?

Gloves are a sizable overhead item. Savings come from other quarters. Employee downtime is reduced, and morale is improved because severe hand injuries are minimized.

Statistics—A survey shows that the average first-aid case involving a hand or arm injury costs about $2.44. Injuries that become infected cost about $39.94 on the average.

Say gloves cost 40 cents a pair and last 40 hours. The prevention of one serious accident could furnish gloves for 99 men for a 40-hour week.

Considerations—The life expectancy of the glove is a major item. If gloves are properly reconditioned when soiled and worn, they will last even longer. Hand guards worn over the gloves further protect the wearer and the glove.

Smoothing Out Production

A rotary straightener solved a "crooked" problem in the fabrication of tubular elements

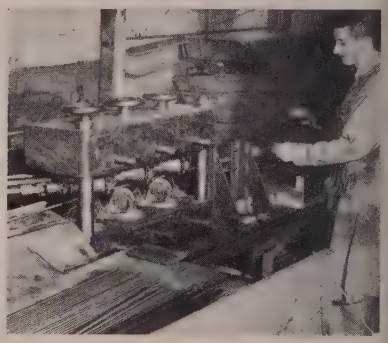
CROOKED tubing hampered production at the Still-Man Mfg. Corp., New York, until the company installed its own tube straightener.

The firm makes tubular heating elements for electric appliances and immersion heaters. Production requires work with copper, stainless and low carbon steel, aluminum, Inconel and Incoloy tubing.

Troublesome—Still-Man used to depend upon the supplier for the required straightness in the tubes. But when they reached the filling department, where wire heating elements are placed inside them, the plunger rods in the filling machine would get stuck.

Some distortion was felt to be the responsibility of the supplier. More frequently, it came from too much handling by employees.

Solution — Today, close to the filling machinery, there's a model AXY rotary straightener, built by Mackintosh-Hemphill Division, E. W. Bliss Co., Pittsburgh. This machine has reduced tube handling and resulting distortions to a minimum.



ROTARY TUBE STRAIGHTENER
. . . takes out bows, waves and bends

The operator can quickly adjust the six crossed rolls to work on tubing with diameters ranging from ¼ to ¾-in. Tubes are cut in lengths from 13 to 84 in. Wall thickness varies from 0.020 to 0.045 in.

About 50,000 ft of tubing is straightened a day in the Still-Man plant. It has no greater deviation from straightness than 0.008 to 0.009 in. a foot.

ACE IN THE HOLE!

Had this smug feeling lately? Pretty nice! Also profitable! You could feel the same way in the shop, too—if you'd change over to CUT STEEL! For this revolutionary, new type abrasive has been a real money-maker for foundries who have tried it and changed over to it. Made by an exclusive process developed by METAL BLAST, CUT STEEL is *not* air-formed, cast or made from wire. Instead, it is actually *cut* from high quality, alloy steel, in a variety of shapes and sizes. And it's producing spectacular results in the cleaning of castings and forgings. Seems like the happy combination of special material, method of forming and the fact that it work-hardens gives CUT STEEL cleaning properties possessed by no other abrasive.

If you feel the need for cutting costs in your cleaning operation—here's the sure way—change over to new CUT STEEL! A trial order will prove it!

Sooner or later, you too, will change to CUT STEEL!

CUT STEEL
ABRASIVE

ANNEALSHOT and SUPER-ANNEALSHOT

PRODUCTS OF

METAL BLAST, INC.

872 EAST 67th STREET • CLEVELAND 3, OHIO

In its original form, CUT STEEL resembles steel grit, with sharp edges and corners.

In usage, it rapidly changes to a spherical shape, in a wide variety of sizes.

New Life for Metals

CHARGING—Container filled with metal is lowered into charging chamber. It's melted with alloying elements

WHAT happens when you melt metals in a vacuum?

The metal is purer. Vacuum distills off low boiling point elements, decomposes oxides and inclusions and removes gases. "It's the way to get more from your metal," says the Carboloy Department of General Electric Co.

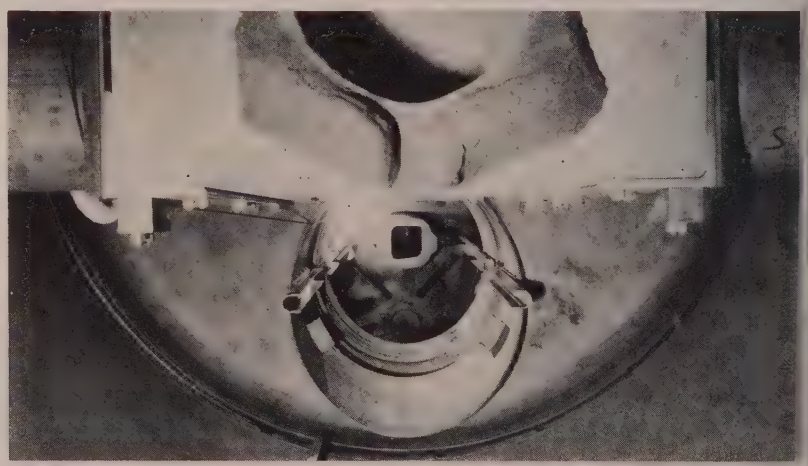
The mechanical properties of many old alloys are improved so much they almost can be called new ones. Brand new alloys are in the offing, too. Some will come from lower cost, less critical metals (such as iron plus aluminum).

Producers will give users more metals alloyed with titanium and zirconium and other elements which cannot be added in quantity in air melting.

Know How—Back of this picture is more than eight years of experience with small-scale melting (4 to 400 lb) in the best nothing GE scientists could devise.

A big step toward commercial reality was taken a few weeks ago when a 1000-lb vacuum furnace started up at Carboloy's Detroit plant (pictures on pages 82 and 83). It will add more than 120,000 lb of vacuum alloys to U. S. capacity per month.

Better—Nickel and cobalt base alloys benefit because there is minimum loss of hardening elements due to oxidation. Better cleanliness gives improved fatigue and stress rupture properties.



READY TO POUR—Ingot mold is ready to be raised into pouring position. A lever tilts the Ajax induction furnace through a hydraulic system

Ductility and workability are tter, so there are fewer rejects ring fabrication. Another plus: acuum melted scrap has excel- nt remelt value.

Cost in Line—Processors say that nen the plusses are counted, they in supply expensive high temper- ture alloys for about the same rice as air melted ones.

Cheaper alloys of low strategic alue are needed for gas turbine uto power and vacuum metallurgy ay give designers the go ahead n everyday turbines.

Largest use for vacuum metals oday is in the turbine field—air- raft, locomotives, stationary pow- r plants, etc. They also are used 1 the airframe industry for land- ng gears and struts.

Newcomer — One of the newest lloys planned for the Carboloy urnace is 1570—for high temper- ture service. Developed by GE, it ontains more cobalt and titanium han M-252 (also made in vacuum) o give better creep and stress upture properties.

Its composition: Carbon, 0.20 per cent; chromium, 20; nickel, 28; cobalt, 38; tungsten, 7; tita- nium, 4; iron, 2. It's being tested for jet engine buckets and other parts where operating tempera- ture must be as high as possible.

Down the Line—Benefits of vac- uum extend to low alloy steels. It holds promise of giving more uni- form, higher quality metal for su- per-strength steels, such as 4340. These steels are heat treated for use at 260,000 to 300,000 psi. Vac- uum may be the answer to cer- tain questions on the performance of these high strength steels.

High chromium alloys, like 430 and 446, normally exhibit brittle fracture at room temperature. When vacuum processed, they have a lower transition temperature, which means better room temper- ature impact strength.

Service life of bearings and springs is related to fatigue strength of the parent alloy. This goes back to alloy cleanliness.

Wire, Too—Lower inclusion con- tent of vacuum melted spring al- loys permits wire to be drawn to finer sizes with better surface fin- ish and less breakage.

Better tool and die steels are in the vacuum picture, too.

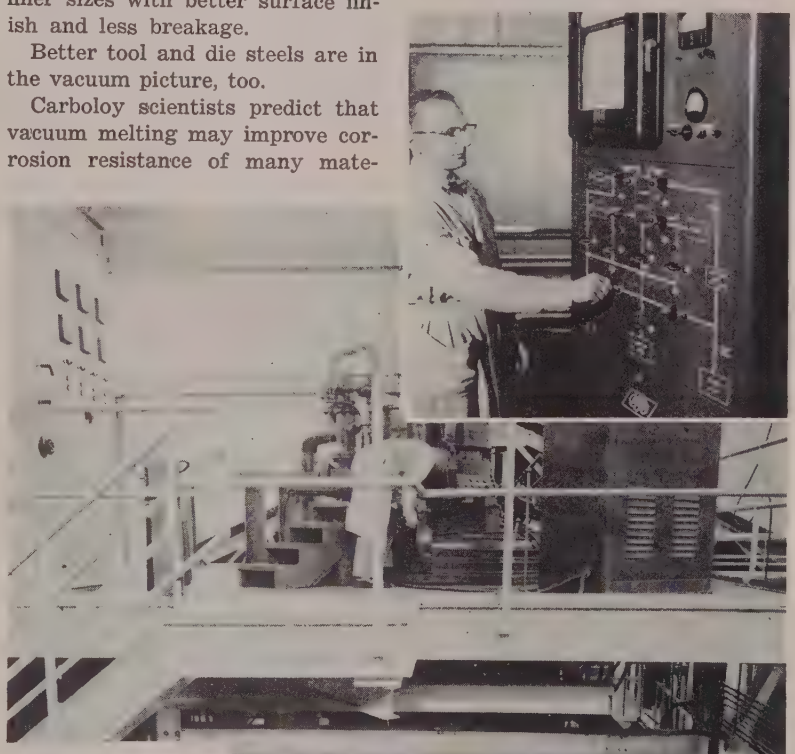
Carboloy scientists predict that vacuum melting may improve cor- rosion resistance of many mate- rials. Because of this, it may per- mit use of less costly alloys in some applications.

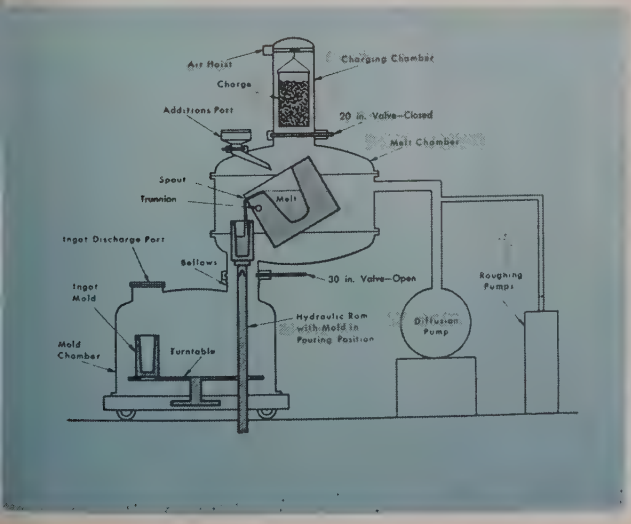
More on Vacuum Metallurgy Coming in STEEL

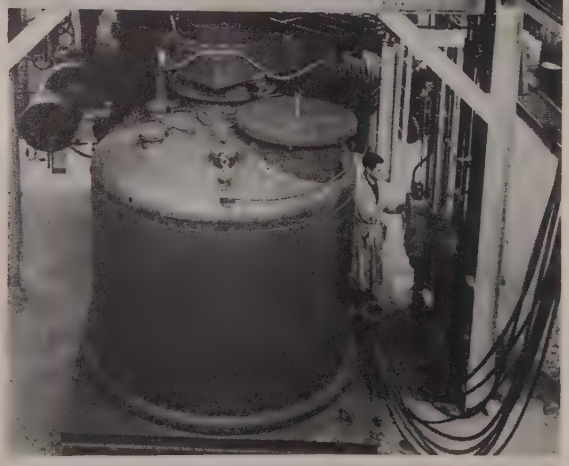
July 25—How Utica Drop Forge & Tool Corp. makes jet engine alloys three times more rugged by melting and casting them in a vacuum.

Aug. 15—How vacuum-melted 52100 and tool steels perform as ball and ring mate- rials at New Departure Division, General Motors Corp.

Extra copies of this article and the two coming up are available in quantities of from one to three until supply is exhausted. Write Editorial Department, STEEL, Penton Bldg., Cleveland 13, O.







The 1000-lb semicontinuous vacuum melting unit at Carboloy, built by Consolidated Vacuum Corp., is three systems tied into one package. One man can run it

Quadruple-Duty Furnace

It saved nearly $37,000 in heat-treating costs during an 8-month period

ONE salt bath furnace is doing four jobs at the G. H. Leland Co., Dayton, O. It carburizes, brazes, does simultaneous brazing and case hardening and hardens.

More than 500 different punched, stamped and machined parts for rotary solenoids, circuit selectors and relays are processed in the unit. The furnace uses a water soluble carburizing salt and operates at temperatures from 1550 to 1650°F.

Costs Down—One secondary operation, simultaneous brazing and carburizing, eliminated three materials handling operations and cut unit costs 80 per cent—from $79 to $13 per 1000 parts.

CARBURIZING
. . . a charge of rotary solenoid cases

Another secondary operation, brazing (case hardening not required), cut unit costs from $14.20 to $9.10 per 1000 parts.

Versatile — The company also uses the furnace to harden low carbon, cold rolled steel parts. The pick-up of a superficially carburized case is not objectionable.

The furnace is a 65-kw, heat-treater's Shopsmith, produced by Ajax Electric Co., Philadelphia.

For Smoother Copper Plates

Electroplaters can get smoother copper plates from high-efficiency baths when the copper is supplied from high-purity, high-density cast anodes rather than ordinary, cast, rolled or electrolytic-copper anodes, says Battelle Memorial Institute, Columbus, O.

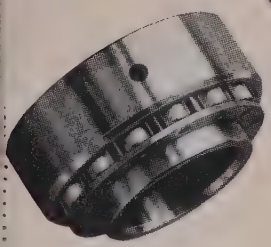
✓ happy balance between dependable performance and moderate cost

ROLLWAY STEEL CAGE ROLLER BEARINGS

Tru-Rol *precision, steel-cage, heavy-duty bearing with contoured guide lips assuring true right-line rolling, maintained roller alignment and thin oil film.*

● Rollway's *TRU-ROL* Steel-Cage Bearings afford wide latitude in balancing *dependable* performance, *long* life, and *high load* capacity against *moderate* cost. They rate high in any comparison on a cost-performance basis.

A choice of stamped steel retainers with contoured guide lips, or steel segmented retainers assure true rolling and an evenly distributed *thin* oil film — *big factors in reducing power losses and heating.*



TYPE D

Rollway Metric Series Steel Cage Roller Bearings

● Rollway Metric Series Steel-Cage Bearings offer the greater load capacity of solid cylindrical rollers, plus the true right-line rolling of trunnion rollers turning in a rigid steel cage. There's no roller skew, no pinch out, no cam action. Design permits maximum bearing capacity . . . within small space . . . at moderate cost.

"Crowned" Rollers Relieve End Stress

TRU-ROL offers the extra advantage of a finish-ground "crown" radius on the roller ends. That relieves high end-stress and insures uniform load distribution over the entire length of the roller. The result: *TRU-ROL* Steel Cage Bearings carry heavier loads over longer periods without excessive end-fatigue. They are less affected by slight misalignment or shaft deflection.

Investigate *TRU-ROL* Steel Cage Roller Bearings before selecting any bearing in the medium price range.

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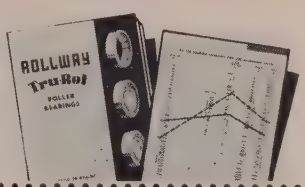

ROLLWAY BEARINGS

COMPLETE LINE OF RADIAL AND THRUST CYLINDRICAL ROLLER BEARINGS

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Please send a free copy of New Tru-Rol Catalog with extra Alignment Charts.

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Give the Cold Water Cure to your METAL CLEANING

...with HOUGHTO-CLEAN COLD CLEANERS

Here's just what the doctor ordered to improve production, raise morale in hot, steamy cleaning rooms!

Houghto-Clean cold cleaners work at high efficiency at room temperature in either still tank or power washers. And HOUGHTO-CLEAN also provides these other definite benefits:

STEADIER PRODUCTION: New comfort for workers means no seasonal dip in production. Moreover, cool parts are more easily handled.

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SAFETY: Freedom from fire danger; non-toxic; non-irritating.

Get the convincing story on HOUGHTO-CLEAN cold cleaning efficiency from the Houghton Man or by writing to E. F. Houghton & Co., 303 West Lehigh Ave., Philadelphia 33, Pa.

HOUGHTO-CLEAN *COLD* CLEANERS
. . . products of

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Ready to give you on-the-job service . . .

Automatic Shell Core and Mold Blower Ups Production

The new Sutter SP-1300 produces hollow and solid, resin-sand mix cores or shell molds which are fully cured and ready for use. Production rate: 50 to 90 cycles an hour.

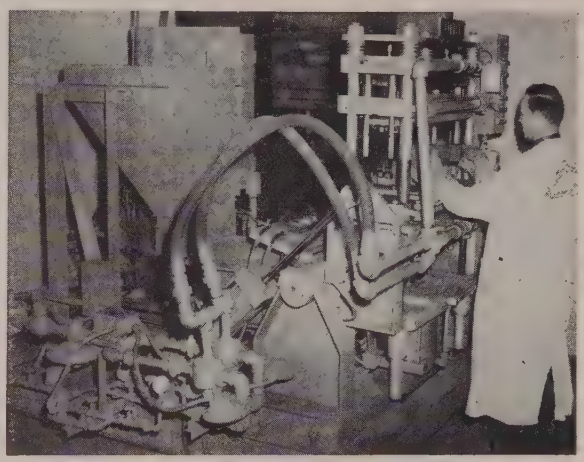
The machine produces cores and molds with precision backs as well as faces. This feature permits a stack molding operation. Molds poured horizontally need no support; molds poured vertically may be supported in fixtures. No backing material is needed.

Precoated sand is used. It may be coated with liquid resin or a dry resin-alcohol mix. With the latter, a core sand muller may be used for mixing.

The machine goes through one cycle automatically; a pushbutton starts the cycle. Electric switches, timers and solenoid valves control air cylinders which move machine components.

Corebox halves are heated by gas-fired, radiant ceramic burners which are adjustable individually for heat distribution on the box. A bank of burners heats the top half of the box, another the bottom. Thermocouples in each box half control gas to the burners to hold the box at a predetermined temperature—usually 450 to 500°F. The blowplate on the machine is water cooled to prevent sand build-up.

A cycle: Starting button closes machine. Top and bottom of box move together vertically; corebox, however, is horizontal with blow opening to the rear. Corebox in clamping device is rocked back 90 degrees to engage blowplate against pressure box containing sand-resin mix. Air cylinders, which tilt the corebox, hold it and the blowplate against the pressure chamber during the blow. Sand is blown into the box (blow usually lasts 3 to 7 seconds).



Corebox is rocked to the vertical and the top half is raised ¼-in. Top and bottom pins, which rest against the core, remain stationary. This permits a clean draw with no breaking of the core at the parting line. At ¼-in. the top pins start to raise with the top of the box for an additional 3½-in. Then the bottom pins raise the core 3½-in. out of the bottom half of the box. The total opening, face to face of corebox halves, is 7¼-in.

The finished core is removed and the start button pushed to repeat the cycle.

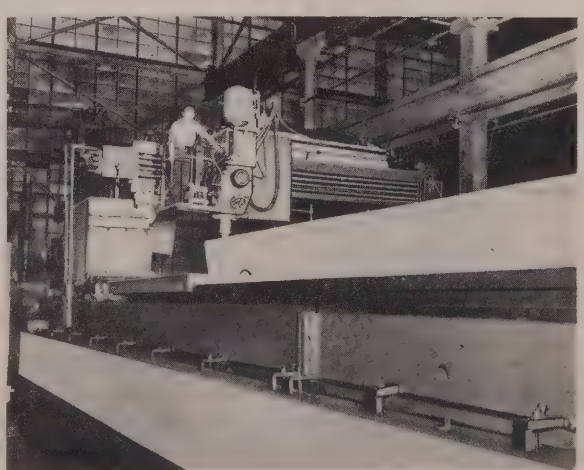
The SP-1300 takes a box 14 x 24 x 7 in. deep. Plans are to offer the machine in a larger size, possibly to handle a 20 x 60-in. pattern box. *Write:* Sutter Products Co., 2005 Westwood Ave., Dearborn, Mich. *Phone:* Logan 3-4400.

Milling Machine Handles Boxcar-Size Castings

This gantry-type mill has a work capacity of 17 x 70 ft. It is hydraulically driven, equipped with a Portland-built Power Pack and a 50-hp heavy-duty milling head.

A hydraulic equalizing system, tracer controlled, prevents seesawing in the longitudinal travel of the rail along the ways. The equalizing system, wholly embodied in the rail, insures an accuracy of 0.002 in. in parallelism, throughout the length of the ways. It also assures a fine finish; relatively few feed marks show in the work.

It is possible and practical to extend the ways indefinitely, within building limitations, to accommodate any length workpiece. Height variation of the rail can be made by inserting risers between the rail and the saddles. *Write:* Portland Machine Tool Works Inc., South Portland, Me. *Phone:* 3-0231



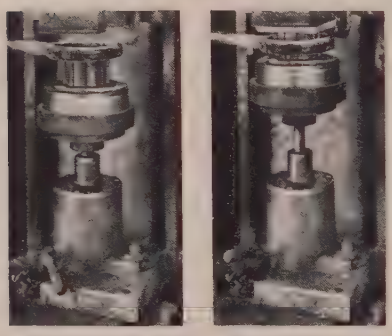
The EASY-FLO equation for strong, low-cost metal joining

PREPLACING THE ALLOY, plus a fast handling and heating setup – that's the EASY-FLO low-temperature silver brazing equation for fast, economical production of virtually indestructible metal joints.

A TYPICAL EXAMPLE is the clutch drum of the HOMELITE Model 17 Chain Saw—noted for its go-power to cut fast without forcing or jamming. At left you see how this drum is produced. EASY-FLO 45 washers and parts are assembled and are then Handy Fluxed and induction brazed with a time cycle per assembly of *only 24 seconds.*

. . . and how's this for STRENGTH?

The manufacturer – HOMELITE CORP., reports: *"there hasn't been a field failure in the 5 years the drums have been EASY-FLO brazed."* Considering the rough, tough, stop-go character of chain saw operation, this provides convincing proof that EASY-FLO joints are virtually indestructible.



Left: Induction brazing fixture with table in loading position. Air valve raises table to brazing position (right). Both joints are brazed at same time.

Unretouched photo shows one of the assemblies after testing to destruction. Despite the terrific force it took to tear the drum apart, the EASY-FLO 45 joints are still intact. That's typical EASY-FLO BRAZED STRENGTH.

Get the full story in Bulletin 20

This bulletin tells why EASY-FLO brazing is inherently fast, reliable and economical. It also gives valuable data on joint design and fast brazing production methods. Write for a copy today.

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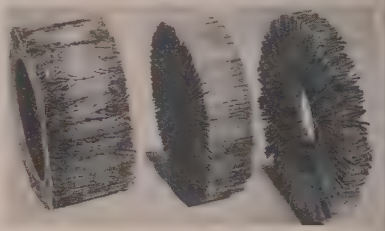
There's no ". . . or equal" for EASY-FLO and SIL-FOS

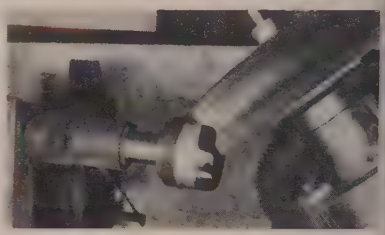
NEW PRODUCTS and equipment

Contour Polishing Wheel

A wearable, coated abrasive wheel, called "Kon-Toor," permits polishing of complex contours with great efficiency. Designed for straight-line and rotary automatic polishing equipment, it is equally adaptable to semiautomatic fixtures.

Advances offered for automatic polishing at production rates include: Development of fine finish





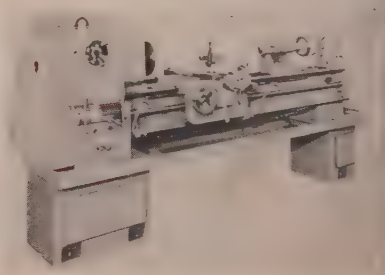
on involved contours; maintenance of original contour through the life of the wheel; elimination of one or more buffing stations.

Wheels are made of U-shaped packets of folded, coated abrasive sheets with grain on both sides. Bushings are provided to fit standard drive spindles. *Write*: Behr-Manning Division, Norton Co., Troy, N. Y. *Phone*: Arsenal 3-0100

Engine Lathes

Model LE "Tray-Top" lathes are made in 10, 12½, 15 and 18-in. sizes. They have 12 spindle speeds in geometric progression, 48 thread and feed changes.

The lathes are offered with a 1,

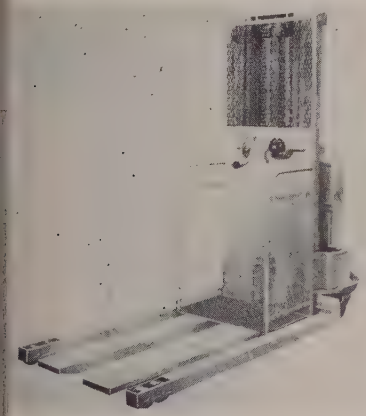


½, 2 or 3-hp motor mounted on ıe rear of the headstock leg. *'rite:* Cincinnati Lathe & Tool ɔ., Cincinnati 9, O. *Phone:* Redood 2121

ligh-Lift Fork Truck

All controls of the new Jack-tacker are mounted on the fork ırriage of the truck. The operator des up with the load on a fully rotected platform.

Made in capacities to 4000 lb,

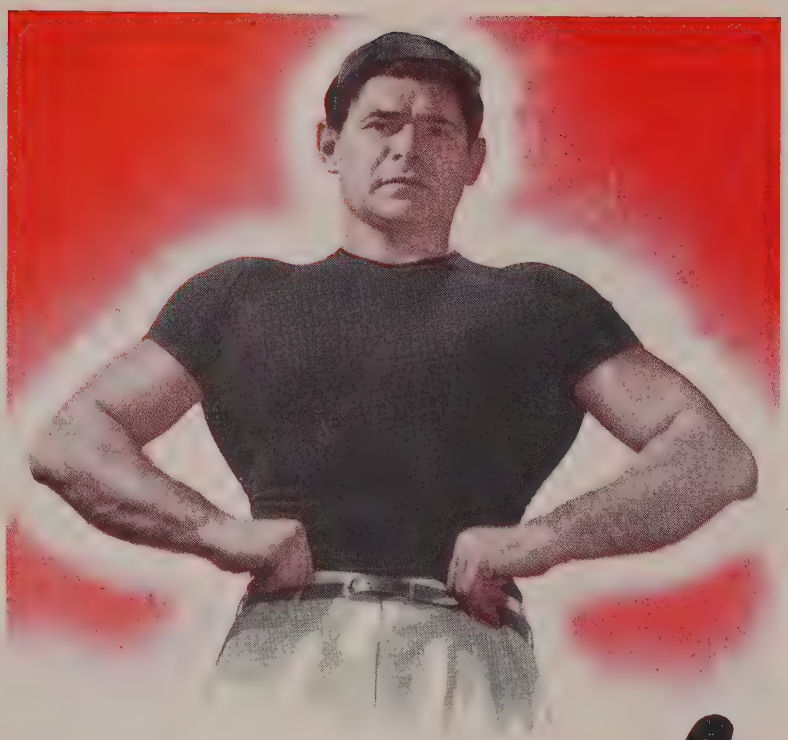


he unit is available in pallet or latform models, with standard lift eights to 129 in. *Write:* Dept. R-9, Lewis-Shepard Products Inc., Vatertown, Mass. *Phone:* 4-5400

Roller Bearing

Designed for farm and materials ıandling equipment, this cartridge oller bearing is housed in a flex-ble Neoprene housing. Called the Rollway Flexi-Flange, it has ex-ellent load-carrying characteris-ics and allows for alignment of hafts.

Shaft limits for the unit are ½ o 1 7/16-in. The ½-in. size sup-orts a radial load of 415 lb at



TOUGH!

U. S. Patent #2184926
(Other patents pending)

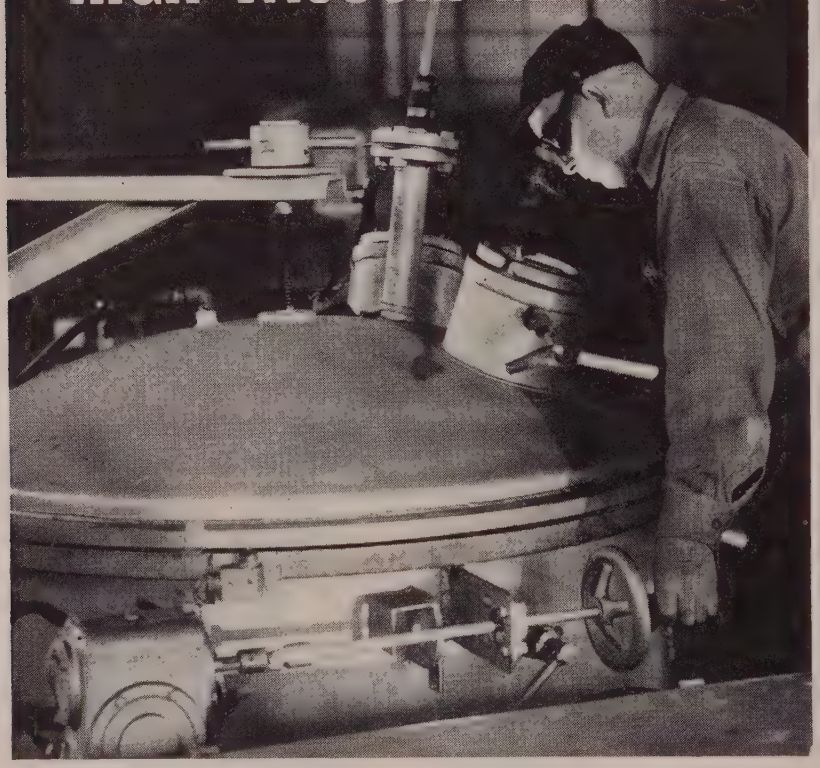
Is your present abrasive tough enough to prove itself in performance? You can't judge an abrasive by looks, claims or promises. The only test of any abrasive is its *cost per ton of castings cleaned.* Because of exclusive metallurgical characteristics, Malleabrasive gives you the lowest cost per ton cleaned of any premium abrasive on the market! This has been proved in hundreds of production tests by users throughout the country. Prove it in your own production test—put muscle behind *your* blast cleaning with Malleabrasive! *We GUARANTEE that Malleabrasive will give you lowest cost per ton of castings cleaned.*

To order Malleabrasive, or for additional information on running a test, contact Globe Steel Abrasive Co., Mansfield, Ohio.

MALLEABRASIVE®

What's the New "Magic" in Metals?

HIGH VACUUM MELTING



Technician viewing melt in NRC Vacuum Furnace from which come metals and alloys with new properties of strength, toughness, "cleanliness".

At Last . . . we've broken the barrier of Conventional Metal Properties!

Is your product made of metal? Is it facing increasingly tough performance demands from your customers? Have classical methods of melting, heat treating, annealing, alloying failed to yield the materials with which you can achieve the results demanded of you? What you want are the facts on *Vacuum Melting*. Out of NRC Vacuum Furnaces come metals and alloys with more closely controlled composition . . . purer . . . free of entrapped gases. They are stronger, tougher, "cleaner" than ever before. Make sure your product designers and metallurgists have the information in our Vacuum Furnace Bulletin. Write today.

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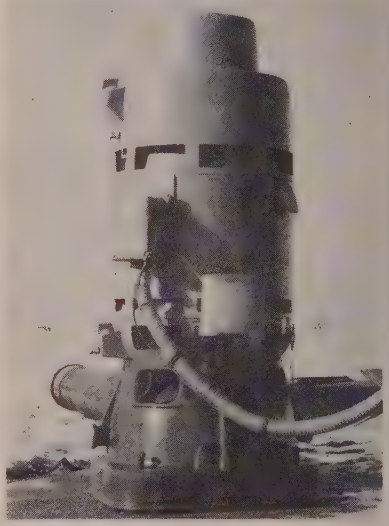
NEW PRODUCTS and equipment

100 rpm; at the same speed, the 1 7/16-in. bearing has a maximum capacity of 1665 lb. *Write:* Rollway Bearing Co., 541 Seymour St., Syracuse, N. Y. *Phone:* 75-2121

Vertical Pump Motors

All major parts of these hollow-shaft motors have been redesigned. Installation, inspection and maintenance have been made easier by using a lightweight cap which can be lifted by one man.

They are available in ratings of



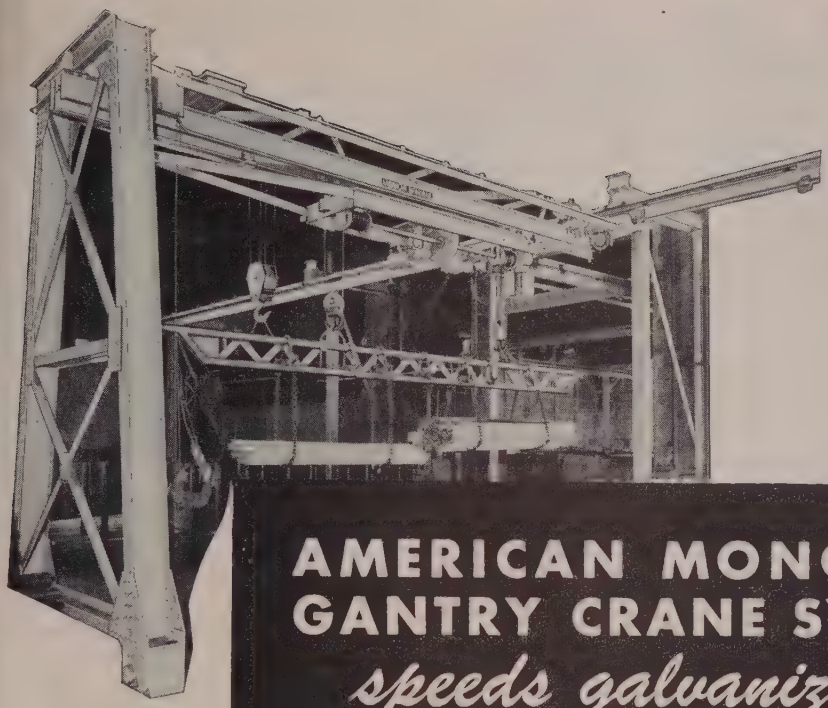
40 hp and up, in frame sizes 404 through 6330. Ratings of 7½-hp and up will be available in early 1956. *Write:* Medium Induction Motor Dept., General Electric Co., Schenectady 5, N. Y. *Phone:* 4-2211

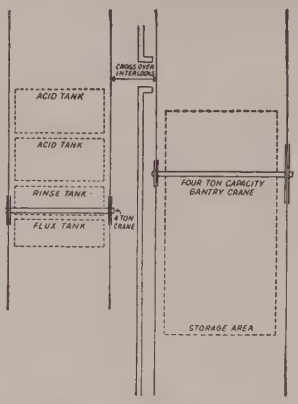
Electronic Computers

Two new Univac-Scientific models use metal magnetic tape to make them compatible with the Univac and the File-Computer. An installation can utilize any two or three of these computers to feed data and results from one to the other interchangeably.

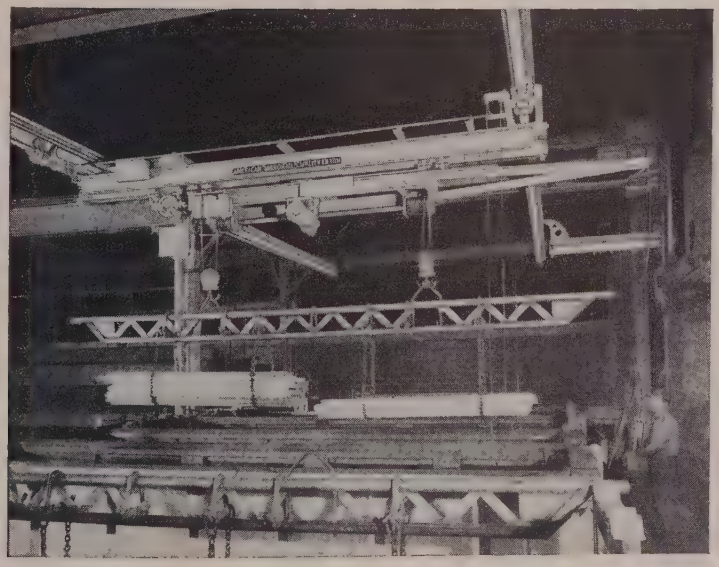
The new models embody additional improvements which increase both capacity and speed of operation. General storage in the unit has been increased from 17,408 to 20,480 registers.

The Univac-Scientific can use the auxiliary equipment developed





AMERICAN MONORAIL GANTRY CRANE SYSTEM *speeds galvanizing!*



Steel fence posts travel from fabrication to galvanizing over a gantry bridge which interlocks at a crossover track through doorway for passage to the MonoRail crane serving the tanks in the plating room.

All travel on the 4-ton system is motor operated and controlled by push-button station in the operator's hand.

Here is truly team-work handling that results in cost savings as well as increased tonnage through the galvanizing process. It is a typical example of American MonoRail engineering available at no obligation for the solution of your handling problems.

Send for Bulletin C-1 illustrating hundreds of successful Mono-Rail installations.

AMERICAN OVERHEAD HANDLING EQUIPMENT

AMERICAN MONORAIL COMPANY

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Phone: Grove Hill 6-2600

Fenner Street, Providence, R. I.
Phone: Gaspee 1-5573, 1-8573

NEW PRODUCTS and equipment

for the commercial Univac. *Write:* Remington Rand Inc., 315 Fourth Ave., New York 10, N. Y. *Phone:* Spring 7-8000

Industrial Oil Filter

Replacement of discs is easier with the bolted-head, model I 6-15 disc filter which provides 5 to 50 gallons a minute at operating pressures up to 50 lb.

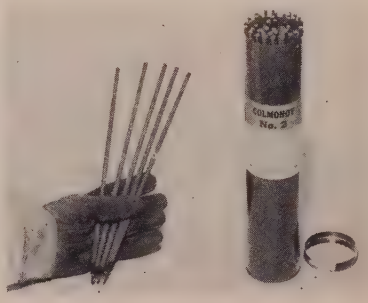
Metal screen discs covered by felt or cloth do the filtering. A

spring-held perforated metal tube supports the discs and acts as a manifold. *Write:* U. S. Hoffman Machinery Corp., 105 Fourth Ave., New York 3, N. Y. *Phone:* Oregon 7-3600

Hard-Facing Alloy

Colmonoy No. 2 is an iron base, chromium-molybdenum-silicon alloy for working surfaces of heavy-duty machinery and equipment where resistance to impact and wear is required.

As deposited, the alloy has a



hardness of Rc 50-55 following the first pass, and 55-60 after the second pass. Tensile strength is 75,000 psi. Specific gravity is 7.6. *Write:* Wall Colmonoy Corp., 19345 John R St., Detroit 3, Mich. *Phone:* Twinbrook 3-3800

Industrial Flooring

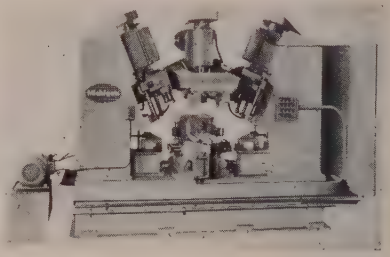
Laticrete is a combination of liquid rubber and a cement powder. It gives but doesn't crack under heavy loads, dampens shock and noise, resists alkalies and mild acids and is waterproof.

The concrete-rubber mix is a surface coating. It can be used for repair work or in new installation. It has good adhesion to concrete and metal. *Write:* Naugatuck Chemical Division, United States Rubber Co., Rockefeller Center, New York 20, N. Y. *Phone:* Circle 7-5000

Automatic Drill

This new Angle-Matic drills 19 holes, at different angles, in automobile frames. Production rate: 160 frames an hour.

The unit has two 5-spindle drill heads and one single-hole driller mounted on self-contained power



units and one 8-spindle angle head. All are fed from a single feed mechanism. *Write:* Michigan Drill Head Co., P. O. Box 4643, Detroit 34, Mich. *Phone:* Jordan 4-5841

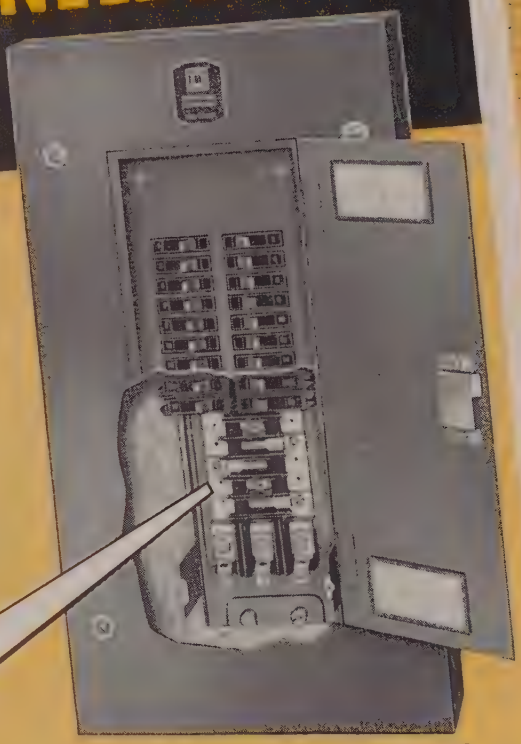
Flat-Type Speed Nuts

The Tinnerman C7000 series can be applied to either A or B (Z) sheet metal screws. One speed nut will accommodate either type screw thread and provide the same self-locking, vibration-proof attachments with equal ease.

Spinning freely down the screw-threads, the base arch of the nut flattens with one or two final

Terrific!

NQO LIGHTING PANELBOARD *with* QO... FINEST BREAKER EVER BUILT!



...Get the complete line "Off-the-Shelf" from your Electrical Distributor or have assembled panels shipped right to the job

It's a top quality line throughout! Note the compact, streamlined beauty. A closer look reveals such outstanding features as: Distributed phase bus arrangement with clear identification for simplified load balancing. Adjustable, indicating trim clamps. Galvanized box with large gutters for real accessibility, yet compact enough to mount between 16" wall studs. Most important of all—the new NQO panelboard offers you the finest breaker ever built, with exclusive **SWINGRIP** mounting.

NEW QO BREAKER
with Exclusive SWINGRIP mounting

No other breaker has all these features which make QO the finest breaker ever built!

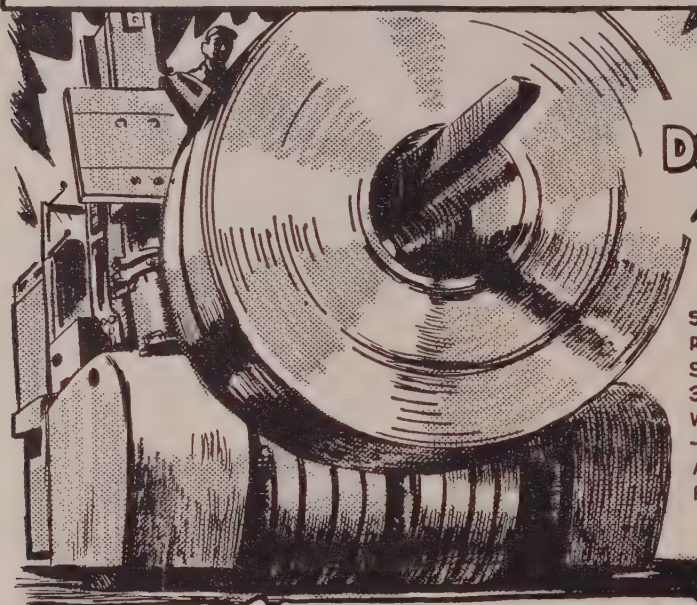
- Plug-In for maximum flexibility as well as ease of installation and maintenance.
- Quick-make, quick-break mechanism provides positive operation, has excellent "feel". Assures positive operation and long life under all circuit switching conditions.
- Compensated thermal trip enables breaker to carry full allowable load under varying ambient temperatures.
- Sensitive calibrated magnetic trip assures quick and consistent response to harmful overloads or short circuits.
- Non-interchangeable design discourages the use of 30, 40 and 50 ampere units where 15 or 20 ampere breakers have been installed.
- Trip indication on overload or short. Handle moves to middle position.
- Positive action of handle against contact members guarantees circuit opening.
- Compact design—¾" width for each pole conserves valuable space.
- Exclusive **SWINGRIP** mounting provides easier installation, automatic alignment, positive contact with bus bars.

ASK YOUR ELECTRICAL DISTRIBUTOR FOR SQUARE D PRODUCTS

SQUARE D COMPANY

FACTS ABOUT Exide®

IRONCLAD® INDUSTRIAL TRUCK BATTERIES

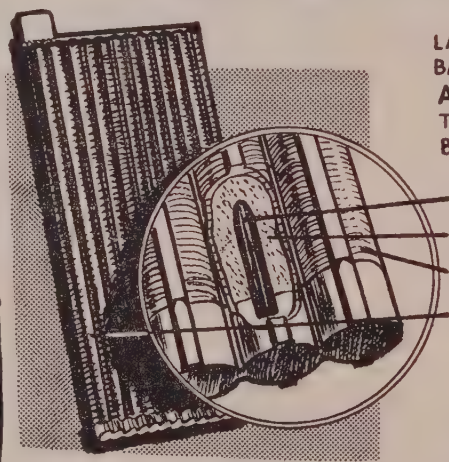


DOING A GIANT'S WORK AT LOWEST COST WITH EXIDE-IRONCLADS

STEEL MILLS USE GIANT **EXIDE-POWERED** RAM TRUCKS TO HANDLE HUGE COILS OF SHEET STEEL WEIGHING AS MUCH AS 30 TONS EACH. THEY WORK FULL-SHIFT WITHOUT COSTLY DOWN-TIME DELAYS -AROUND THE CLOCK. **EXIDE** DEPENDABILITY AND EXCEPTIONALLY LONG USEFUL LIFE RESULTS IN LOWEST HANDLING COSTS PER TON.

BATTERIES ARE WORKED TO DEATH BY EXIDE ENGINEERS TO LEARN SECRETS OF LONGER LIFE

SINCE 1910, RESEARCHERS HAVE GREATLY IMPROVED EXIDE-IRONCLAD PERFORMANCE AND USEFUL WORKING LIFE, BUT THE BASIC IRONCLAD PRINCIPLE OF TUBULAR CONSTRUCTION REMAINS THE SAME.



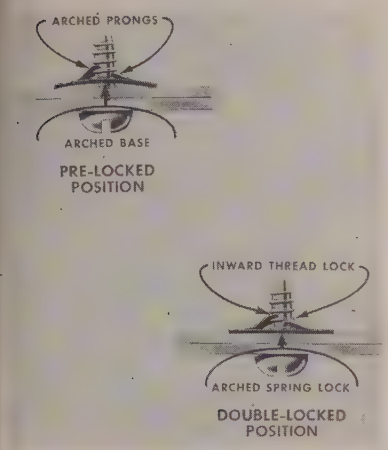
LAB TESTS OF IRONCLADS AGAINST CONVENTIONAL TYPES OF BATTERIES SHOW THAT THEY GIVE BETTER PERFORMANCE... **AND FROM 20% TO 30% LONGER LIFE!** THESE TWO FACTS, DEMONSTRATED BY THOUSANDS OF BATTERY USERS, ARE THE REASON WHY...

EXIDE-IRONCLADS ARE YOUR BEST POWER BUY **AT ANY PRICE!**

LET EXIDE HELP SOLVE YOUR INDUSTRIAL TRUCK BATTERY PROBLEMS ❶ CALL AN EXIDE SALES ENGINEER FOR FULL DETAILS ❷ WRITE FOR FORM 1982, A MANUAL ON INSTALLING AND MAINTAINING MOTIVE POWER BATTERIES

Exide INDUSTRIAL DIVISION, The Electric Storage Battery Company, Philadelphia 2, Pa.

NEW PRODUCTS and equipment

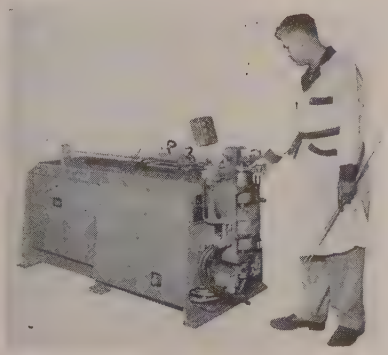


turns, providing an "arched spring lock." The fastener's prongs are forced into the roots of the threads to create an "inward thread lock." *Write:* Dept. 14, Tinnerman Products Inc., P.O. Box 6688, Cleveland 1, O. *Phone:* Shadyside 1-9300

Tube Bending Machine

This automatic-cycle unit will form two 180-degree bends simultaneously in ferrous or nonferrous finned or plain tubing in less than 3 seconds.

The machine has a single-tube



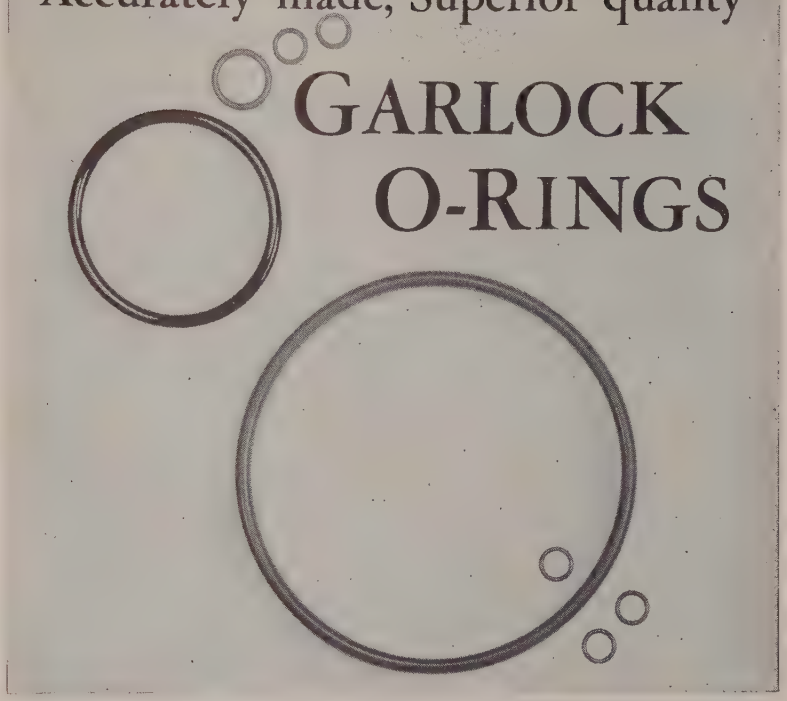
capacity of up to 1-in. diameter. Bends having legs up to 4 ft long can be handled. *Write:* Walter P. Hill Inc., 22183 Telegraph Rd., Detroit 19, Mich. *Phone:* Kenwood 4-9190

Tool Grinders

Four models are in this line, which ranges from precision grinders with 6-in. wheels to heavy-duty machines with 14-in. wheels. All are double-end models with re-

Accurately made, Superior quality

GARLOCK O-RINGS



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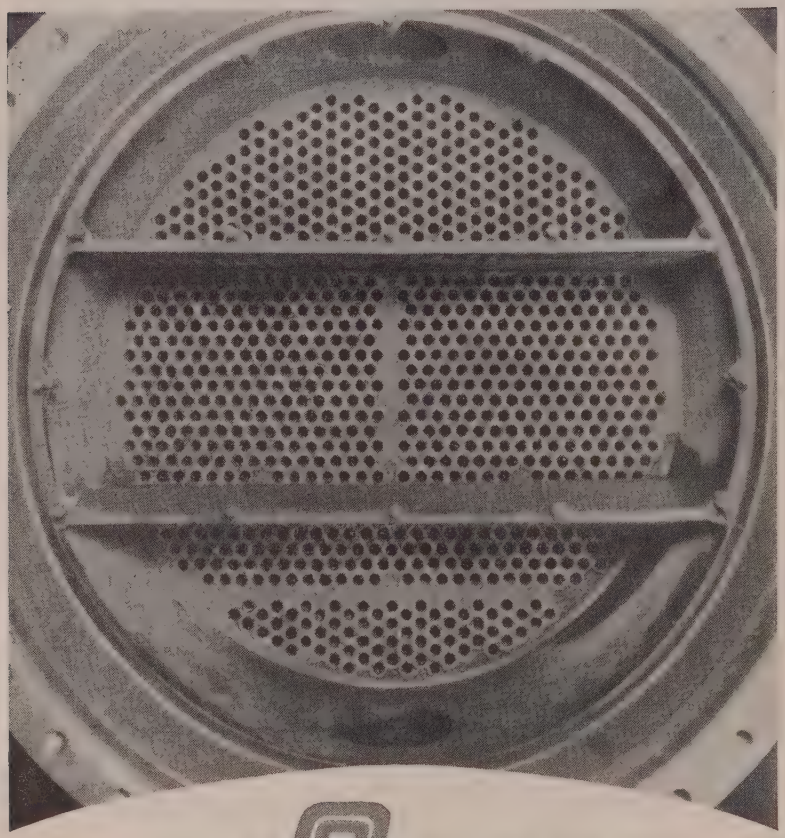
For complete information, just contact your Garlock office or write for new O-Ring folder AD-148.

THE GARLOCK PACKING COMPANY, PALMYRA, NEW YORK

In Canada: The Garlock Packing Company of Canada Ltd., Toronto, Ont.

GARLOCK

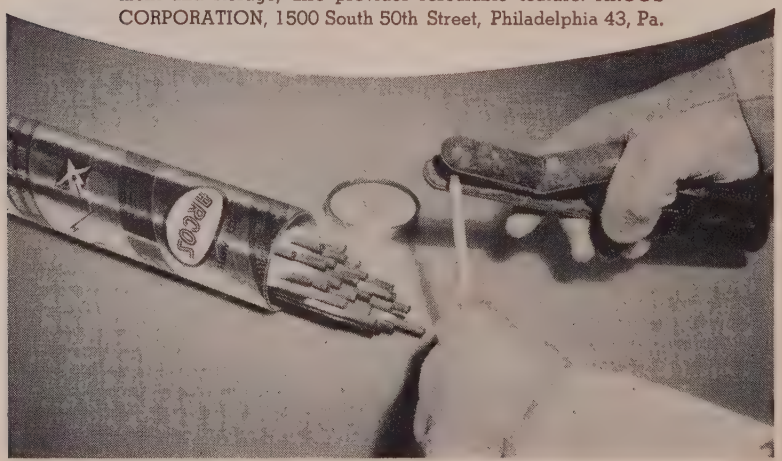
Save time, money and worry when welding stainless steels



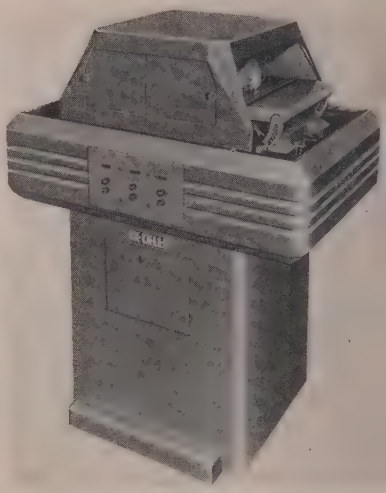
WELD WITH ARCOS

STAINLESS ELECTRODES

Arcos controls in manufacture guarantee highest quality weld metal easily deposited. Widest electrode selection in the industry enables you to meet accurately the physical, chemical and metallurgical requirements of every job. Special ELECTRO-PAK prevents moisture pickup and chipped coatings in shipment and storage, also provides resealable feature. ARCOS CORPORATION, 1500 South 50th Street, Philadelphia 43, Pa.



NEW PRODUCTS and equipment



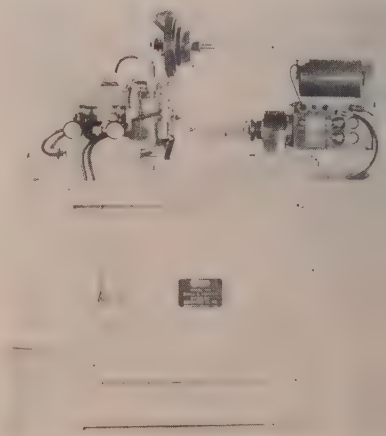
versible motors for proper wheel rotation for both left and right-hand tools.

Silicon carbide, aluminum oxide or diamond wheels may be used to grind carbides, cast alloys or high-speed steels. *Write*: Ex-Cell-O Corp., 1200 Oakman Blvd., Detroit 32, Mich. *Phone*: Townsend 8-3900

Drilling, Tapping Unit

The model 410 automatic machine accurately locates and holds rivets or other headed parts for axial tapping or drilling.

Production in mild steel: No. 30 drill, 9/32-in.-deep holes, 40 a min-



ute; No. 17 drill, 5/32-in.-deep holes, 45 a minute; No. 8-32 tap, 3/16-in.-deep holes, 80 a minute. *Write:* Batchelder Engineering Co. Inc., 125 Main St., Springfield, Vt. *Phone:* 3101

NEW Literature

Write directly to the company for a copy

Sintering Furnaces

"Furnaces for Sintering Powder Metal Products" illustrates the units available from this company—bulletin B-101, 12 pages. Drever Co., Bethayres, Pa.

Handling Survey

Here is a case study on a materials handling problem that was solved with fork lift trucks—job study 145. Towmotor Corp., 1226 E. 152nd St., Cleveland 10, O.

Aluminum Sheet Wall Chart

Weight and bend data on aluminum sheet in standard alloys are presented. Industrial Service Division, Kaiser Aluminum & Chemical Sales Inc., 1924 Broadway, Oakland 12, Calif.

Adjustable Speed Drive

The simplicity of operation and economy of the general-purpose, full-wave Thy-mo-trol is detailed—GEA-6234, 8 pages. General Electric Co., Schenectady 5, N. Y.

Steel Strapping

Heavy-duty, flat steel strapping equipment and accessory items are illustrated—8 pages. Gerrard Steel Strapping Division, 2915 W. 47th St., Chicago 32, Ill.

Lubrication Pumps

Four bulletins describe this line of equipment—Nos. 5531, 5533, 5535 and 5537, 2 pages each. Trabon Engineering Corp., 1814 E. 40th St., Cleveland 3, O.

Ore Agglomeration

Descriptions, characteristics of processes and technical data in this field are given—booklet E-32, 24 pages. American Ore Reclamation Section, Engineering and Construction Division, Koppers Co. Inc., Koppers Bldg., Pittsburgh 19, Pa.

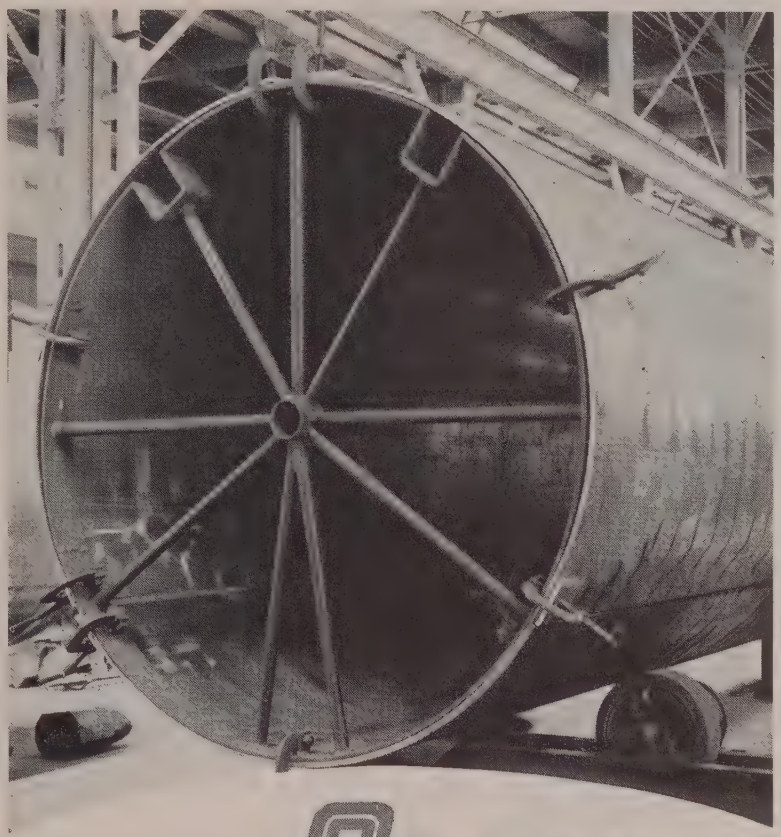
Cold-Formed Fasteners

Fastening information is given in a series of data sheets titled, "Cold-Forming Design Data." Townsend Co., New Brighton, Pa.

Asbestos Textiles

This manual covers asbestos lap, roving, yarn, cloth, tubing, cord, wick, rope and tape—16 pages. Johns-Manville, 22 E. 40th St., New York 16, N. Y.

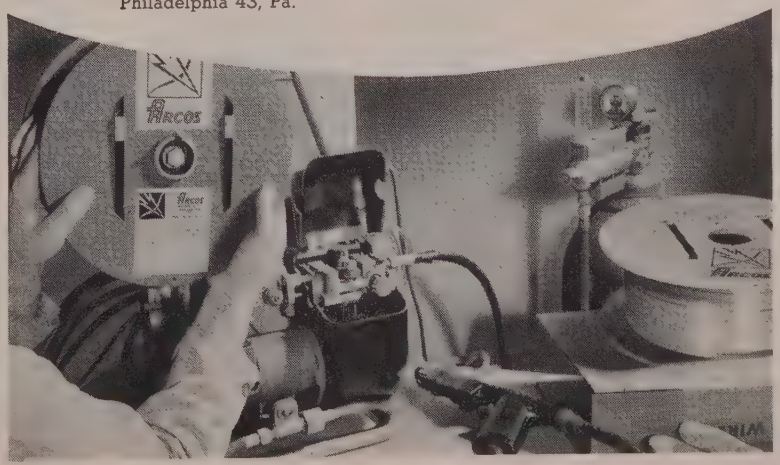
How to improve quality on every aluminum job welded by inert gas

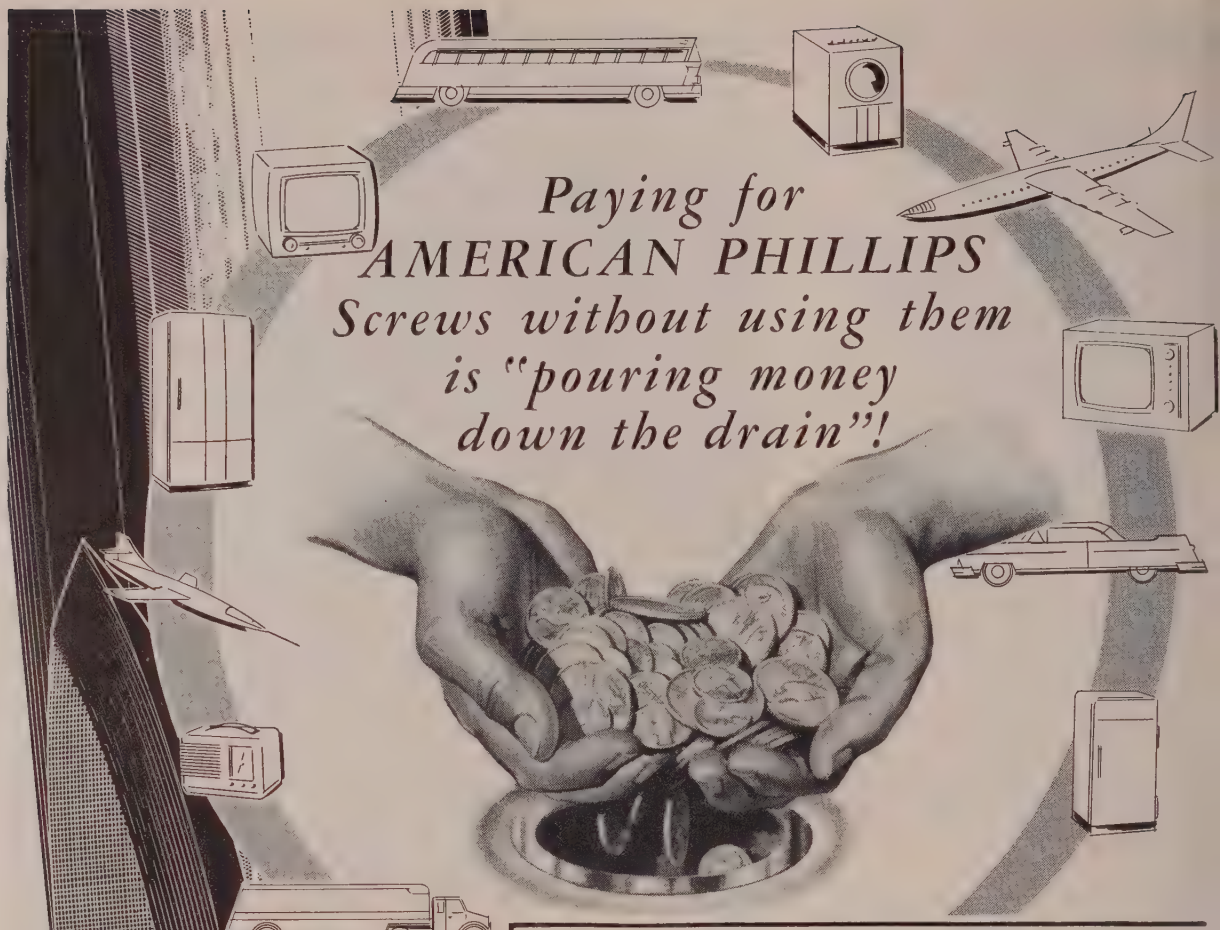


WELD WITH ARCOS

ALUMINUM SPOOLED WIRE

The advantages of aluminum weld-fabrication are many. But only a quality weld metal can produce them with maximum benefit. Arcos manufacturing controls applied to ALUMAR Spooled Wire are a sure guarantee. Within a critically controlled range you can meet every characteristic with "peace of mind". ARCOS CORPORATION, 1500 South 50th Street, Philadelphia 43, Pa.





Paying for AMERICAN PHILLIPS Screws without using them is "pouring money down the drain"!

Many plants paying *less* (on the face of the price tag) for old-fashioned fastening methods . . . are actually paying *more* than they would have to pay for American Phillips Screws. For these modern fasteners not only prevent lost material, lost-time accidents, and rejected product . . . they also speed up assemblies as much as 50%. That's why they *always cost least to use.*

And in addition to these Phillips advantages, there are many special American advantages . . . unlimited supplies of all sizes, types and head styles . . . engineering service with an unmatched record of solving special problems . . . quality guarded by self-checking inspection system . . . full measure assured by precision counting. That's why more and more mass producers of hard goods "buy American" every year . . . because they know their production lines will keep rolling. And *you* can have this same peace of mind.

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STEEL

July 4, 1955

Market Outlook

LOOK for second-half steel production to be below that of the first, even though the metalworking industry expects a 2 per cent gain in its sales.

In the first half, the steel industry was filling the pipelines of supply and building consumers' inventories to support an increased rate of consumption. That is accomplished, and the steel industry needs merely to turn out enough for the current rate of usage.

OVER THE DAM—One of the incentives to build inventories is gone. It was the aim to get deliveries before a midyear increase in steel prices.

Although the metalworking industry expects a 2 per cent gain in sales in the second half over the first (see STEEL, June 27, p. 37), all segments of it will not fare alike.

SLOWDOWN—The automobile industry (biggest consumer of steel) expects to produce 18 per cent fewer passenger cars in the third quarter than in the second, even though it raised its sights from earlier projections for the third quarter. Much of the third period will see model change-overs, which interrupt production. The first and second quarters had no such interruptions. Some of the auto producers already have asked that deliveries on some of their steel orders be deferred.

CONTRASTS—In contrast, the government says construction (second largest user of steel) will be 5.8 per cent better than estimated earlier for this year.

Railroads have begun to show some life in their freight car buying.

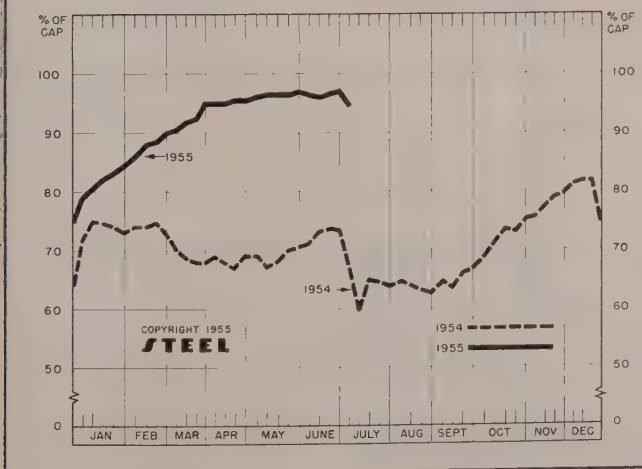
If steel production were to continue in the last half at the brisk pace of the first, the year's outturn would be 114.8 million net tons of ingots and castings. That would be more than the record of 111.6 million net tons set in 1953, when the first-half's yield of 57.9 million tons exceeded the 57.4 million tons of the first half of 1955.

NO SLACK—Although steel demand may ease off in the second half, don't count on a shortening in delivery times. Steel output will be down, too. Summer vacations and hot weather reduce steel production in July and August. Some of the steelmaking furnaces will have to be taken off for repairs. They have been pushed to rated capacity or above, and they can't stand that continuously.

OUTPUT OFF—A decline is already recorded for the opening of the second half. Because mills had to prepare for a steelworkers' strike, the ingot rate in the week ended July 3 slipped to a preliminary 94.5 per cent of capacity. That's a 2.5 point decline from the preceding week.

OPTIMISTIC—Even though the second-half outlook is for reduced steel output, the steel industry is optimistic about the long haul. Eleven producers applied to the Office of Defense Mobilization in the first half for accelerated tax amortization privileges on 70 projects totaling a billion dollars (see page 35). It would be 1959 or 1960 before those projects could be completed. ODM has no steel expansion goal now, but the producers are lining up just in case there is one.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged)

	Week Ended July 3§	Change	Same Week 1954	Same Week 1953
Pittsburgh	99	+ 1*	67	92.5
Chicago	97.5	0*	79	102
Mid-Atlantic	98	+ 1.5	57	96.5
Youngstown	98	0	72	93
Wheeling	94.5	— 1.5	88.5	99
Cleveland	102	+ 0.5	58.5	97.5
Buffalo	104.5	0	67	106.5
Birmingham	96	+ 2.5	76	99.5
New England	85	— 7	50	83
Cincinnati	81	— 6.5	64	99
St. Louis	106	0	65.5	107.5
Detroit	98	+ 0.5	24	105
Western	105	— 3	86	107
National Rate	94.5	— 2.5	67	96

INGOT PRODUCTION‡

	Week Ended July 3	Week Ago	Month Ago	Year Ago
INDEX (1947-1949=100)	144.9†	142.7	143.9	97.6
NET TONS (In thousands)	2,320†	2,292	2,312	1,568

*Change from preceding week's revised rate. †Estimated. §Preliminary, subject to strike action. ‡Amer. Iron & Steel Institute. Weekly capacity (net tons): 2,413,278 in 1955; 2,384,549 in 1954; 2,254,459 in 1953.

Metalworking Outlook—p. 29

Technical Outlook—p. 67

Price Indexes and Composites

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	June 28 1955	June 21 1955	Month Ago	June Average
(1947-1949=100)	144.9	144.9	144.8	144.8

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics)

Week Ended June 28

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them write to STEEL.

Rails, Standard, No. 1	$4.525	Sheets, Electrical	$9.350
Rails, Light, 40 lb	5.917	Strip, C.R., Carbon	7.493
Tie Plates	5.275	Strip, C.R., Stainless, 430 (lb)	0.415
Axles, Railway	7.500	Strip, H.R., Carbon	5.075
Wheels, Freight Car, 33 in. (per wheel)	48.500	Pipe, Black, Buttweld (100 ft)	15.000
Plates, Carbon	4.675	Pipe, Galv., Buttweld (100 ft)	18.605
Structural Shapes	4.517	Pipe, Line (100 ft)	146.804
Bars, Tool Steel, Carbon (lb)	0.430	Casing, Oil Well, Carbon (100 ft)	154.216
Bars, Tool Steel, Alloy, Oil Hardening Die (lb)	0.525	Casing, Oil Well, Alloy (100 ft)	227.875
Bars, Tool Steel, H.R., Alloy, High Speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.115	Tubes, Boiler (100 ft)	‡
Bars, Tool Steel, H.R., Alloy, High Speed W 18, Cr 4, V 1 (lb)	1.610	Tubing, Mechanical, Carbon	‡
Bars, H.R., Alloy	8.875	Tubing, Mechanical, Stainless, 304 (100 ft)	167.023
Bars, H.R., Stainless, 303 (lb)	0.423	Tin Plate, Hot-dipped, 1.25 lb	8.533
Bars, H.R., Carbon	5.000	Tin Plate, Electrolytic, 0.25 lb	7.233
Bars, Reinforcing	4.963	Black Plate, Canmaking Quality	6.333
Bars, C.F., Carbon	8.160	Wire, Drawn, Carbon	8.075
Bars, C.F., Alloy	11.375	Wire, Drawn, Stainless, 430 (lb)	0.545
Bars, C.F., Stainless, 302 (lb)	0.438	Bale Ties (bundle)	5.860
Sheets, H.R., Carbon	4.870	Nails, Wire, 8d Common	7.815
Sheets, C.R., Carbon	5.864	Wire, Barbed (80-rod spool)	7.139
Sheets, Galvanized	7.290	Woven Wire Fence (20-rod roll)	16.925
Sheets, C.R., Stainless, 302 (lb)	0.553		

‡Not available.

STEEL's FINISHED STEEL PRICE INDEX*

	June 29 1955	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 avg.=100)	194.53	194.53	194.53	189.75	156.69
Index in cents per lb	5.270	5.270	5.270	5.140	4.245

STEEL's ARITHMETICAL PRICE COMPOSITES

Finished Steel, NT*	$118.45	$118.45	$118.45	$113.20	$94.36
No. 2 Fdry, Pig Iron, GT	56.54	56.54	56.54	56.54	46.47
Basic Pig Iron, GT	56.04	56.04	56.04	56.04	45.97
Malleable Pig Iron, GT	57.27	57.27	57.27	57.27	47.27
Steelmaking Scrap, GT	36.50	35.25	34.67	27.83	37.50

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL	June 29 1955	Week Ago	Month Ago	Year Ago	5 Y A
Bars, H.R., Pittsburgh	4.30	4.30	4.30	4.15	3.4
Bars, H.R., Chicago	4.30	4.30	4.30	4.15	3.4
Bars, H.R., deld. Philadelphia	4.55	4.55	4.55	4.405	3.9
Bars, C.F., Pittsburgh	5.40	5.40	5.40	5.20	4.10-4.
Shapes, Std., Pittsburgh	4.25	4.25	4.25	4.10	3.4
Shapes, Std., Chicago	4.25	4.25	4.25	4.10	3.4
Shapes, deld., Philadelphia	4.53	4.53	4.53	4.38	3.4
Plates, Pittsburgh	4.225	4.225	4.225	4.10	3.5
Plates, Chicago	4.225	4.225	4.225	4.10	3.5
Plates, Coatesville, Pa.	4.225	4.225	4.225	4.10	3.6
Plates, Sparrows Point, Md.	4.225	4.225	4.225	4.10	3.5
Plates, Claymont, Del.	4.225	4.225	4.225	4.10	3.6
Sheets, H.R., Pittsburgh	4.05	4.05	4.05	3.925	3.3
Sheets, H.R., Chicago	4.05	4.05	4.05	3.925	3.3
Sheets, C.R., Pittsburgh	4.95	4.95	4.95	4.775	4.1
Sheets, C.R., Chicago	4.95	4.95	4.95	4.775	4.1
Sheets, C.R., Detroit	5.10	5.10	5.10	4.975	4.3
Sheets, Galv., Pittsburgh	5.45	5.45	5.45	5.275	4 4
Strip, H.R., Pittsburgh	4.05	4.05	4.05	4.425	3.25-3
Strip, H.R., Chicago	4.05	4.05	4.05	3.925	3 2
Strip, C.R., Pittsburgh	5.75	5.75	5.75	5.45	4.15-4
Strip, C.R., Chicago	5.85	5.85	5.85	5.70	4.3
Strip, C.R., Detroit	5.90	5.90	5.90	5.65	4.35-4.
Wire, Basic, Pittsburgh	5.75	5.75	5.75	5.525	4.5
Nails, Wire, Pittsburgh	6.85	6.85	6.85	6.55	5.3
Tin plate (1.50 lb), box, Pitts.	$9.05	$9.05	$9.05	$8.95	$7.8
SEMIFINISHED STEEL					
Billets, Forging, Pitts. (NT)	$78.00	$78.00	$78.00	$75.50	$63.
Wire Rods, ⅜-⅝" Pitts.	4.675	4.675	4.675	4.525	3.
PIG IRON, Gross Ton					
Bessemer, Pitts.	$57.00	$57.00	$57.00	$57.00	$47.0
Basic, Valley	56.00	56.00	56.00	56.00	46.0
Basic, deld. Phila.	59.66	59.66	59.66	59.66	49.4
No. 2 Fdry, Pitts.	56.50	56.50	56.50	56.50	46.5
No. 2 Fdry, Chicago	56.50	56.50	56.50	56.50	46.5
No. 2 Fdry, Valley	56.50	56.50	56.50	56.50	46.5
No. 2 Fdry, deld. Phila.	55.16	55.16	55.16	60.16	49.9
No. 2 Fdry, Birm.	52.88	52.88	52.88	52.88	42.3
No. 2 Fdry (Birm.) deld. Cin.	60.58	60.58	60.58	60.43	49.0
Malleable, Valley	56.50	56.50	56.50	56.50	46.5
Malleable, Chicago	56.50	56.50	56.50	56.50	46.5
Ferromanganese, Duquesne	190.00†	190.00†	190.00†	200.00†	175.0

*75-82% Mn, gross ton, Etna, Pa. †74-76% Mn, net ton.

SCRAP, Gross Ton (Including broker's commission)					
No. 1 Heavy Melt, Pitts.	$35.50	$34.50	$34.50	$29.50	$41.0
No. 1 Heavy Melt, E. Pa.	39.00	37.25	35.50	23.00	34.0
No. 1 Heavy Melt, Chicago	35.00	34.00	34.00	31.00	37.5
No. 1 Heavy Melt, Valley	37.50	35.50	34.50	28.50	41.5
No. 1 Heavy Melt, Cleve.	35.00	32.50	31.50	27.50	39.5
No. 1 Heavy Melt, Buffalo	29.50	29.50	29.50	26.50	39.0
Rails, Rerolling, Chicago	52.50	51.50	51.50	42.50	47.5
No. 1 Cast, Chicago	42.50	41.50	40.50	36.00	44.5
COKE, Net Ton					
Beehive, Furn, Connlsvl.	$13.75	$13.75	$13.75	$14.75	$14.2
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	16.75	15.5
Oven, Fdry, Chcago	24.50	24.50	24.50	24.50	21.0

Daily Nonferrous Price Record

	Price June 29	Last Change	Previous Price	May Avg.	Apr. Avg.	June 1954 Avg.
Copper	36.00	Mar. 29, 1955	33.00	36.000	36.000	30.000
Lead	14.80	Oct. 4, 1954	14.55	14.800	14.800	13.906
Zinc	12.00	Apr. 6, 1955	11.50	12.000	11.927	10.923
Tin	95.00	June 24, 1955	94.875	91.410	91.458	94.178
Nickel	64.50	Nov. 24, 1954	60.00	64.500	64.500	60.000
Aluminum	23.20	Jan. 12, 1955	22.20	23.200	23.200	21.500
Magnesium	28.50	Mar. 21, 1955	27.00	28.500	28.500	27.000

Quotations in cents per pound based o COPPER, deld. Conn. Valley; LEAD, co mon grade, deld. St. Louis; ZI prime western, E. St. Louis; T Straits, deld. New York; NICKEL, el trolytic cathodes, 99.9%, base size refinery, unpacked; ALUMINUM, prima ingots, 99+%, deld.; MAGNESIU 99.8%, Freeport, Tex.

What You Can Use the Markets Section for:

- **A source of price information.** Current prices are reported each week. Price changes are shown in italics. Price trends are shown in tables of indexes and comparisons.
- **A directory of producing points.** Want to know who makes something, or where it is made? The steel price tables alphabetically list the cities of production and indicate the producing company. If you are a buyer, you may want to make a map showing comparative distances of sources of supply and to help you compute freight costs. If you are a seller of supplies you can make a map to spot your sales possibilities.
- **A source of price data for making your own comparisons.** Maybe you want to keep a continuous record of price spread between various forms of steel. You can get your base price information from STEEL's price tables.
- **A source of information on market trends.** Newsy items tell you about the supply-demand situation of materials, including iron and steel, nonferrous metals and scrap. Other articles analyze special situations of interest and importance to you.
- **Reports on iron and steel production, and materials and product shipments.**

How a National-Standard wire development took

A BETTER "REEF" IN BABY'S PANTS

• Almost any product can be made better. Take safety pins.

A prominent manufacturer came to National-Standard with this idea: "Give us," he said, "a polished wire that needs no plating, yet won't corrode . . . a better, stronger, springier wire to which we can attach a plastic head."

A National-Standard research team took on the problem . . . and produced a special stainless steel wire with a mirror finish that needed no further polishing. They gave it magnetic properties so that bits of steel could be easily removed from the plastic compound used for heads . . . to protect costly dies and equipment. They gave it a special temper that made it springier, tougher, yet still easy to form.

Thousands of manufacturers have learned to depend on National-Standard for development and manufacture of special types of wire, wire cloth and strip steel . . . fussy, hard-to-make products that many companies hesitate to tackle. Why not give us a call and see what we can do for *you*.

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WORCESTER WIRE WORKS DIVISION • WORCESTER, MASS.
Round and Shaped Steel Wire, Small Sizes

Nonferrous Metals

Yates subcommittee comes up with an equitable distribution plan for aluminum in the third quarter. It won't mean much if Commerce department doesn't cut scrap exports

Nonferrous Metals Prices, Pages 104 & 105

AN EQUITABLE DISTRIBUTION plan for aluminum has been evolved by the Yates subcommittee. It sets up an approximate 60-40 split of the domestic supply between primary producers and nonintegrated users. It is a "paper" plan, however, dependent on export control action by the government—no action, no equitable distribution.

According to the committee's report to Defense Mobilizer Arthur S. Flemming, the total estimated supply of aluminum in the third quarter will be 1114 million lb, made up of 786 million lb of domestic production, 128 million lb from Aluminum Co. of Canada and 200 million lb of scrap. The nonintegrated users are on the books of the Big Three for 236 million lb; they'll get 60 million lb from Alcan; and they'll get about 80 per cent of the scrap, or 160 million lb.

Big IF—That gives the small businesses about 456 million lb of pig, ingot, billet or scrap, leaving about 648 million lb for the primary producers. The subcommittee believes this is a fair plan, but only if the Office of Export Supply of the Commerce department plays ball and curbs exports of aluminum scrap. This action has been urged by the industry since the pinch in supply began in the first quarter.

The government responded by imposing token restrictions which allowed exports of both primary and scrap aluminum to remain at 1954 levels but kept them from becoming larger. Last year was a big one for aluminum exporters. They sent more than 78.5 million lb overseas. Both the primary and secondary producers have requested the government to put a quota on scrap of 1 million lb a month. As of this writing, the Commerce department had made no move on the requests of the producers or the subcommittee.

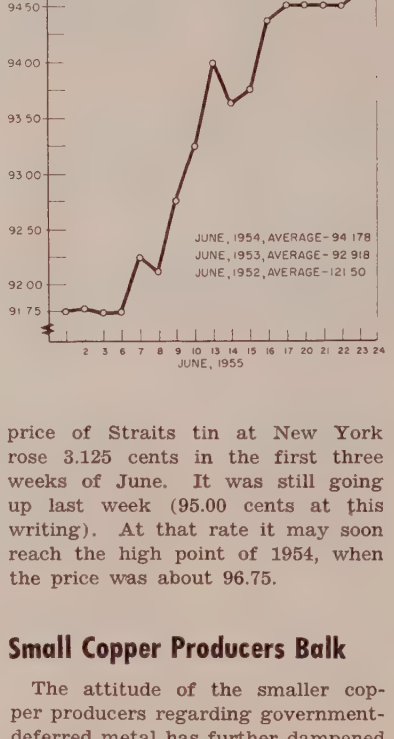
Big Omission—One big point the subcommittee left out of its report to Mr. Flemming was the role of the nonintegrated manufacturer who doesn't use pig, ingot or billet. He buys his semifinished products—sheet, plate, extrusion stock, etc.—from the bigger producers for further processing into end items or components. Some industry men believe that is a more serious problem than the main subject of the subcommittee's investigation.

Where Will Tin Price Stop?

The big question in the tin industry is where will the price stop. As the chart below shows, the spot price of Straits tin at New York rose 3.125 cents in the first three weeks of June. It was still going up last week (95.00 cents at this writing). At that rate it may soon reach the high point of 1954, when the price was about 96.75.

Spot Tin Price Heading for Old Levels?

(Straits at New York, cents per pound)



Small Copper Producers Balk

The attitude of the smaller copper producers regarding government-deferred metal has further dampened the outlook of the industry for some immediate supply relief. It is reported from Washington that these producers do not want to deliver to civilian customers the metal released by the government in the second and third quarters. Many of these firms are high-cost producers. They feel that delivering in small quantities to individual customers as compared with large deliveries to the government would raise costs too muc In addition, they are looking ahea to the time when the stockpile po tion of the diversions must be pa back. At present, stockpile repay ments are scheduled for no later tha Dec. 31, 1955, and Mar. 31, 195 Most observers see the copper shor age extending well into 1956, an these small producers feel that t divert now and pay double later ma be like robbing Peter to pay Pau

Obey DMS Regulations

The best way to assure yourself sufficient copper for defense an Atomic Energy Commission work to identify your orders to supplie of copper controlled materials as re quired by Defense Materials Syste Reg. 1. According to the Coppe Division of Business & Defense Serv ices Administration, some contractor and subcontractors are not doin this, resulting in nondelivery of ma terials for some vital work. BDS points out that there is plenty metal available for such orders, 10 million lb having been set aside i both the second and third quarter

BDSA says in the *Copper Industr Report* for the spring quarter tha aside from the legal aspects of th situation and prompt delivery, prop er marking of defense orders lead to the following benefits for the use "It provides the springboard for 'fu mobilization' for . . . defense . . . i case of enemy attack. Secondly, provides a 'defense shipment patter which may be one of the factor considered for: Allocations unde mobilization conditions, tax amortiza tion, contract negotiation or othe dealings with the government."

This applies equally well to alum num and steel, the other metal under DMS regulation, BDSA off cials point out.

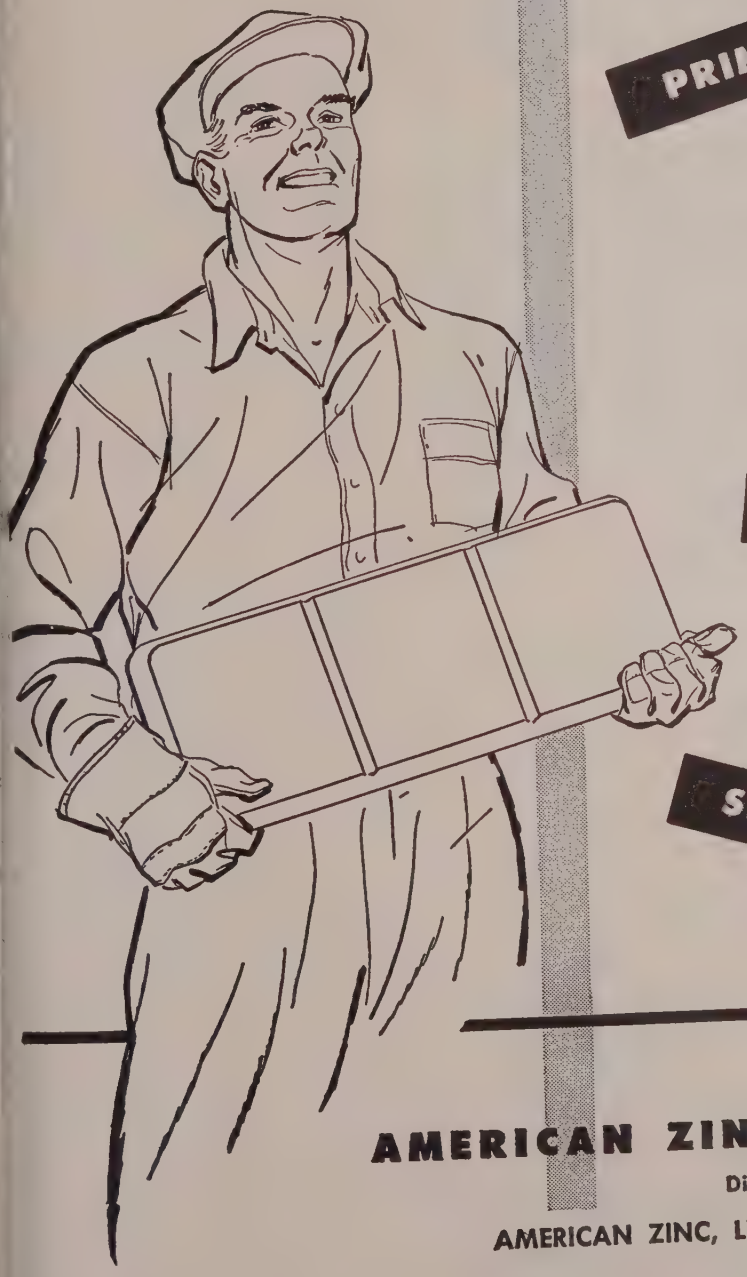
Market Memos

• Bache & Co. thinks the 36-cen price of copper is harming fabrica tors. The company proposes freein the price and making it responsiv to the law of supply and demand.

• Stainless steel producers are allo cating their products to warehouse according to the Bulletin of the Na tional Association of Purchasin Agents. They may be doing like wise to civilian industrial consume by now. The reason: The nick shortage.

every grade of ZINC
for urgent military and
civilian requirements

SLAB ZINC



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HIGH GRADE

SPECIAL HIGH GRADE

AMERICAN ZINC SALES COMPANY

Distributors for

AMERICAN ZINC, LEAD & SMELTING COMPANY

Columbus, O. Chicago St. Louis New York

Nonferrous Metals

Cents per pound, carlots, except as otherwise noted

PRIMARY METALS AND ALLOYS

Aluminum: 99 + %, ingots 23.20, pigs 21.50, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 25.00; No. 43, 5% Si, 24.80; No. 142, 4% Cu, 1.5% Mg, 2% Ni, 26.50; No. 195, 4.5% Cu, 0.8% Si, 25.90; No. 214, 3.8% Mg, 26.40; No. 356, 7% Si, 0.3% Mg, 24.90.

Antimony: R.M.M. brand, 99.5%, 28.50, Lone Star brand, 29.00, f.o.b. Laredo, Tex., in bulk. Foreign brands, 99.5%, 27.00-28.00, New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb. f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa., Elmore, O.

Beryllium Copper: 3.75-4.25% Be, $40 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa., or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $1.70 per lb, deld.

Cobalt: 97-99%, $2.60 per lb for 550-lb keg; $2.62 per lb for 100-lb case; $2.67 per lb under 100 lb.

Columbium: Powder, $119.20 per lb, nom.

Copper: Electrolytic 36.00 deld. Conn. Valley; 36.00 deld. Midwest; Lake 36.00 deld; Fire refined 35.75 deld.

Germanium: 99.9%, $295 per lb, nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $90-$100 nom, per troy oz.

Lead: Common 14.80, chemical 14.90, corroding 14.90, St. Louis; N. Y. basis, add 0.20.

Lithium: 99% +, cups or ingot, $11.50; rod, $13.50; shot or wire, $14.50, f.o.b. Minneapolis, 100 lb lots.

Magnesium: 99.8%, self-palletizing pig 28.50; notched ingot 29.25, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40 for pig and 1.45 for ingot; for Madison, Ill., add 1.20 for pig and 1.25 for ingots; for Los Angeles, add 2.50 for both pig and ingot. Sticks 1.3 in. diameter, 49.00, 100 to 4999 lb, f.o.b. Madison, Ill.

Magnesium Alloys: AZ91C and alloys C, H, G and R 34.00; alloy M 36.00, 10,000 lb or more, f.o.b. Freeport, Tex. For Port Newark, N. J., add 1.40; for Madison, Ill., add 0.50; for Los Angeles, add 2.50.

Mercury: Open market, spot, New York, $277-$279 per 76-lb flask.

Molybdenum: Powder 99% hydrogen reduced $3-$3.25 per lb; pressed ingot $4.06 per lb; sintered ingot $5.53 per lb.

Nickel: Electrolytic cathodes, sheets (4 x 4 in. and larger), unpacked 64.50; 10-lb pigs, unpacked 67.65; "XX" nickel shot 69.00; "F" nickel shot or ingots for addition to cast iron, 64.50; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.92.

Osmium: $80-$100, nom., per troy oz.

Palladium: $20-$21 per troy oz.

Platinum: $77-$80 per troy oz from refineries.

Radium: $16-$21.50 per mg radium content, depending on quantity.

Rhodium: $118-$125 per troy oz.

Ruthenium: $45-$55 per troy oz.

Selenium: 99.5%, $6-$7.25 per lb.

Silver: Open market, 90.00 per troy oz.

Sodium: 16.50, c.l.; 17.00 l.c.l.

Tantalum: Sheet, rod $68.70 per lb; powder $56.63 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, N. Y., spot and prompt, 95.00.

Titanium: Sponge, 99.3+ %, grade A-1 ductile (0.3% Fe max) $3.95, grade A-2 (0.5% Fe max) $3.50 per pound.

Tungsten: Powder, 98.8%, carbon reduced. 1000-lb lots $4.35-$4.40 per lb, nom., f.o.b. shipping point; less than 1000 lb add 15.00; 99+% hydrogen reduced, $4.65. Treated ingots, $6.70.

Zinc: Prime Western, 12.50; brass special, 12.75; intermediate, 13.00, E. St. Louis, freight allowed over 0.50 per pound. High grade, 13.85; special high grade, 14.00, deld. Diecasting alloy ingot No. 3, 16.50; Nos. 2 and 5, 17.00, deld.

Zirconium: Ingots, commercial grade, $14.40 per lb; low-hafnium reactor grade, $23.07. Sponge, $7.50 per lb. Powder, electronics grade, $15 per lb; flash grade, $11.50. (Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston alloys, 26.75-28.50; No. 12 foundry alloy (No. 2 grade), 25.50-26.00; 5% silicon alloy, 0.60 Cu max, 28.00-28.25; 13 alloy, 0.60 Cu max, 28.00-28.25; 195 alloy, 28.00-28.25; 108 alloy, 26.00-26.50. Steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 26.00-27.00; grade 2, 25.00-26.00; grade 3, 24.50-25.00; grade 4, 23.50-24.00.

Brass Ingot: Red brass No. 115, 34.50; tin bronze No. 225, 45.00; No. 245, 39.75; high-leaded tin bronze No. 305, 38.00; No. 1 yellow, No. 405, 29.25; manganese bronze No. 421, 31.75.

Magnesium Alloy Ingot: AZ63A, 32.00; AZ91B, 32.00; AZ91C, 32.00; AZ92A, 32.00.

NONFERROUS MILL PRODUCTS

BERYLLIUM COPPER

(Base prices per lb, plus mill extras, 2000 to 5000 lb, f.o.b. Temple, Pa.; nominal 1.9% Be alloy) Strip, $1.74; rod, bar, wire, $1.71.

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000-lb lots, 41.35; 30,000-lb lots, 41.48; l.c.l., 41.98. Weatherproof, 100,000-lb, 40.78; 30,000 lb, 41.03; l.c.l., 41.53. Magnet wire deld., 15,000 lb or more, 48.15; l.c.l., 48.90.

LEAD

(Prices to jobbers, f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets, full rolls, 140 sq ft or more $20 per cwt; pipe, full coils $20 per cwt; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $14.00-$14.50; sheared mill plate, $11.00; strip, $14.00-$14.50; wire, $10.00-$10.50; forging billets, $8.75; hot-rolled and forged bars, $8.75.

ZINC

(Prices per lb, c.l., f.o.b. mill) Sheets, 23.00; ribbon zinc in coils, 20.00-20.50; plates, 19.00-22.25.

ZIRCONIUM

Plate, $22; H.R. strip, $19; C.R. strip, $29; forged or H.R. bars, $17; wire, 0.015 in., 1.00c per linear foot.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
Sheet, C.R.	102	78	99
Strip, C.R.	102	87	125
Plate, H.R.	97	82	95
Rod, Shapes H.R.	87	69	93
Rod, Shapes C.R.	91	75	115
Seamless Tubes	122	108	153
Shot, Blocks	...	65	...

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Diam. (in.) or across flats	Round 2011-T3	Round 2017-T4	Hexagonal 2011-T3	Hexagonal 2017-T4
Drawn				
0.125	63.5	62.0	...	...
0.156-0.172	53.9	52.3	...	...
0.188	53.9	52.3	...	66.8
0.219-0.234	51.1	49.5	...	...
0.250-0.281	51.1	49.5	...	63.7
0.313	51.1	49.5	...	60.8
Cold-finished				
0.375-0.547	49.9	47.5	59.8	57.2
0.563-0.688	49.9	47.5	56.9	53.7
0.750-1.000	48.7	46.3	52.1	50.6
1.063	48.7	46.3	...	48.9
1.125-1.500	46.9	44.6	50.4	48.9
Rolled				
1.563	45.7	43.4	...	...
1.625-2.000	45.1	42.8	...	47.2
2.125-2.500	44.0	41.7	...	...
2.563-3.375	42.7	40.5	...	...

ALUMINUM

Sheets and Circles: 1100 and 3003 mill finis (30,000 lb base; freight allowed over 499 lb

Thickness Range Inches	Flat Sheet	Flat Sheet Circles*	Coiled Sheet	Coile Shee Circl
0.249-0.136	35.9	40.4	...	.
0.135-0.096	36.4	41.3	...	.
0.095-0.077	37.1	42.3	34.6	39
0.076-0.061	37.7	43.2	34.8	39
0.060-0.048	38.2	43.6	35.1	40
0.047-0.037	38.7	44.5	35.6	40
0.037-0.030	39.1	45.0	36.0	41
0.029-0.024	39.7	45.5	36.3	41
0.023-0.019	40.4	46.9	37.1	42
0.018-0.017	41.2	...	37.7	43
0.016-0.015	42.1	...	38.5	44
0.014	43.1	...	39.5	46
0.013-0.012	44.3	...	40.2	47
0.011	45.3	...	41.4	48
0.010-0.0095	46.5	...	42.5	50
0.009-0.0085	47.8	...	44.0	52
0.008-0.0075	49.4	...	45.2	54
0.007	50.9	...	46.7	56
0.006	52.5	...	48.1	61

*48 in. max diam. †26 in. max diam.

ALUMINUM

Plates and Circles: Thickness 0.250-3 in 24-60 in. width or diam, 72.240 in. lengths.

Alloy	Plate Base	Circle Ba
1100-F, 3003-F	34.6	38.8
5050-F	35.7	39.9
3004-F	36.7	41.6
5052-F	38.4	43.4
6061-T6	39.6	44.0
2024-T4*	41.8	47.9
7075-T6*	49.6	56.2

*24-48 in. widths or diam, 72-180 in. length

ALUMINUM

Forging Stock: Round, Class 1, 47.80-37.3 in specific lengths 36-144 in., diameters 0.37 8 in. Rectangles and squares, Class 1, 53.6 41.00 in random lengths, 0.375-4 in. thic widths 0.750-10 in.

Pipe: A.S.A. Schedule 40, alloy 6063-T6, 20- lengths, plain ends, 90,000-lb base, per 100 f

Nom. Pipe Size (in.)		Nom. Pipe Size (in.)	
¾	$16.10	2	$ 49.
1	25.35	4	136.
1¼	34.30	6	244.
1½	41.00	8	368.

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 97.0 0.064-in. 76.00, 0.125-in. 61.50, 30,000 lb a over, f.o.b. mill.

Plate: Hot-rolled AZ31, 59.00, 30,000 lb more, 0.250 in. and over, widths to 48 in lengths to 144 in.; raised pattern floor plat 62.00, 30,000 lb or more, ¼-in. thick, width 24-72 in., lengths 60-192 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in 72.20; 1 x 4 in., 67.00. Rod, 1 in., 69.0 2 in., 66.50. Tubing, 1 in. OD x 0.065 in 90.00. Angles, 1 x 1 x ⅛-in., 75.90; 2 x 2 ¼-in., 70.00. Channels, 5 in., 70.90. I-beam 5 in., 70.20.

NONFERROUS SCRAP

DEALER'S BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 1100 clippings, 15.00-15.50; c sheets, 12.00-12.50; borings and turnings, 8.5 9.00; crankcases, 12.00-12.50; industrial cas ings, 12.00-12.50.

BRASS MILL PRICES

	MILL PRODUCTS a				SCRAP ALLOWANCES f	
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnin
Copper	54.76b	52.36c	....	54.82	32.000	32.000	31.25
Yellow Brass	46.27	46.21d	46.81	49.18	23.875	23.625	22.00
Red Brass, 85%	50.99	50.93	51.53	53.80	28.125	27.875	27.37
Low Brass, 80%	49.75	49.69	50.29	52.56	27.000	26.750	26.75
Naval Brass	49.99	44.30	57.05	53.15	22.125	21.875	21.37
Com. Bronze, 90%	52.78	52.72	53.32	55.34	29.250	29.000	28.50
Nickel Silver, 10%	60.20	62.53g	62.53	....	27.625	27.375	13.81
Phos. Bronze, A, 5%	73.03	73.53	73.53	74.71	32.250	32.000	31.00
Silicon Bronze	58.82	58.01	58.86	60.80e	31.125	30.875	30.12
Manganese Bronze	53.73	47.83	58.24	....	22.125	21.875	21.37
Muntz Metal	48.14	43.95	....	....	22.375	22.125	21.62

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 lb, f.o.b. shippin point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leade

Copper and Brass: No. 1 heavy copper and wire, 32.00-33.00; No. 2 heavy copper and wire, 30.50-32.00; light copper, 28.50-30.00; No. 1 composition red brass, 25.00-26.00; No. composition turnings, 24.50-25.50; yellow brass turnings, 15.00; new brass clippings, 24.50-23.00; No. 1 brass rod turnings, 19.50-20.00; light brass, 15.50-17.00; heavy yellow brass, 17.00-18.00; new brass rod ends, 20.50-21.00; auto radiators, unsweated, 18.50-20.00; cocks and faucets, 20.00-20.50; brass pipe, 19.00-20.50.

Lead: Heavy, 11.50-12.00; battery plates, 6.50-6.75; linotype and stereotype, 14.00-14.25; electrotype, 12.00-12.50; mixed babbitt, 14.50.

Magnesium: Clippings 18.50-19.50; clean castings 18.00-19.00; iron castings, not over 10% removable Fe, less full deduction for Fe, 16.00-17.00.

Monel: Clippings, 38.00-39.00; old sheets, 33.00-34.50; turnings, 29.50; rods, 38.00-39.00.

Nickel: Sheets and clips, 80.00-90.00; rolled anodes, 80.00-90.00; turnings, 65.00-75.00; rod ends, 80.00-90.00.

Zinc: Old zinc, 5.00-5.50; new die-cast scrap, 5.00-5.50; old die-cast scrap, 3.50-3.75.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 1100 clippings, 18.50-19.50; 3003 clippings, 18.00-20.00; 6151 clippings, 18.00-19.50; 5052 clippings, 18.00-19.50; 2014 clippings, 17.50-19.00; 2017 clippings, 17.50-19.00; 2024 clippings, 17.50-19.00; mixed clippings, 17.00-19.50; old sheet, 15.00-16.50; old cast, 15.50-16.50; clean old cable (free of steel), 18.00-19.50; borings and turnings, 16.50-17.50.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 48.00; light scrap 43.00.

Copper and Brass: No. 1 copper, 36.50-36.00; No. 2 copper, 34.00-34.50; light copper, 32.25-32.75; refinery brass (60% copper) per dry copper content, 30.50-31.75.

INGOTMAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper and Brass: No. 1 copper, 35.25; No. 2 copper, 33.25-33.75; light copper, 31.00-32.00; No. 1 composition borings, 27.50-27.75; No. 1 composition solids, 28.00-28.25; heavy yellow brass solids, 20.00-21.00; yellow brass turnings, 19.00-20.00; radiators, 21.00-22.00.

PLATING MATERIAL

(F.o.b. shipping point, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $1.70 per lb.

Copper: Flat-rolled 51.42, oval 50.92, 5000-10,000 lb; electrodeposited 49.40, 2000-5000 lb lots; cast 50.54, 5000-10,000 lb quantities.

Nickel: Depolarized, less than 100 lb $1.015; 100-499 lb 99.58; 500-4999 lb 95.50; 5000-29,999 lb 93.50; 30,000 lb 91.50. Carbonized, deduct 3 cents a lb. All prices eastern delivery effective Jan. 1, 1956.

Tin: Bar or slab, less than 200 lb, $1.135; 200-499 lb, $1.12; 500-999 lb, $1.115; 1000 lb or more, $1.11.

Zinc: Bar, 21.00; bar or flat top, 20.00, ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100-lb drums.

Chromic Acid: Less than 10,000 lb 28.50; over 10,000 lb 27.50.

Copper Cyanide: 100 lb 76.80; 200 lb 76.05; 300 lb 75.80; 400-900 lb 75.05; 1000 lb and over 73.05; effective Mar. 24, 1955.

Copper Sulphate: Crystal, 100 lb 21.50; 200 lb 18.50; 300 lb 17.50; 400 lb 17.00; 500-1900 lb 15.50; 2000-10,000 lb 15.25; 10,000 lb and up 1515. Powder, add 0.5 to above prices. Effective Mar. 29, 1955.

Nickel Chloride: 100 lb 46.50; 200 lb 44.50; 300 lb 43.50; 400-4900 lb 41.50; 5000-9900 lb 39.50; 10,000 lb and over 38.50. All prices eastern delivery, effective Jan. 1, 1955.

Nickel Sulphate: 100 lb 38.25; 200 lb 36.25; 300 lb 35.25; 400-4900 lb 33.25; 5000-35,900 lb 31.25; 36,000 lb 30.25. All prices eastern delivery, effective Jan. 1, 1955.

Silver Cyanide: (Cents per ounce) 4-oz bottle, 83.125; 16-oz bottle, 81.875; 80-oz bottle, 79.375; 100-oz bottle, 79.375; f.o.b. St. Louis, New York and Los Angeles. Effective Apr. 6, 1955.

Sodium Cyanide: Egg, under 1000 lb 19.80; 1000-19,900 lb 18.80; 20,000 lb and over 17.80; granular, add 1-cent premium to above.

Sodium Stannate: Less than 100 lb, 72.00; 100-600 lb, 57.60; 700-1900 lb, 55.20; 2000-9900 lb, 53.40; 10,000 lb or more, 52.30.

Stannous Chloride (Anhydrous): Less than 50 lb, $1.582; 50 lb, $1.242; 100-300 lb, $1.092; 400-900 lb, $1.068; 1000-1900 lb, $1.043; 2000-4900 lb, $1.006; 5000-19,900 lb, 94.60; 20,000 lb or more, 88.50.

Stannous Sulphate: Less than 50 lb, $1.281; 50 lb, 98.10; 100-1900 lb, 96.1; 2000 lb or more, 94.10.

Zinc Cyanide: Under 1000 lb 54.30; 1000 lb and over 52.30.

for FAST and SAFE Handling!

This sturdy, fast moving ⅜ yard machine has a lifting capacity up to 16,000 lbs. . . . swings in a full 360° circle. With the New FULL RANGE VISION Cab, the operator can SEE what he is doing, at all times. Promotes greater safety . . . speeds up the job. Other Challenger features include: *Self-aligning, Replaceable Hook Shoes . . . Force Feed Lubrication . . . Full Floating Trunnion-Mounted Tapered Drums . . . Straight-in-Line Engine Mounting with Torque Converter . . . Interchangeability of Parts, etc.*

Unit models are also available in ½ and ¾ yard Excavators . . . Cranes up to 20 tons capacity . . . Crawler or Mobile types . . . Gasoline or Diesel.

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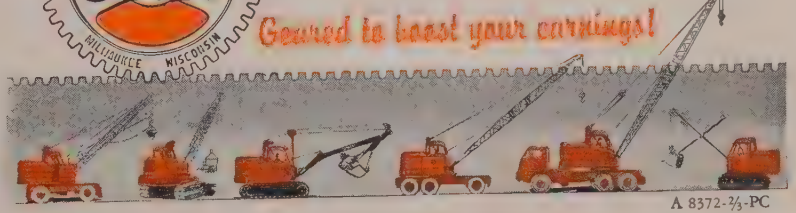

A 8372-⅔-PC

Steel Prices

Mill prices as reported to STEEL, cents per pound except as otherwise noted. *Changes shown in italics.* Code numbers following mill points indicate producing company. Key on page 107. Key to footnotes, page 109.

SEMIFINISHED

INGOTS, Carbon, Forging (NT)

Munhall,Pa. U5 .....$61.50

INGOTS, Alloy (NT)

Detroit R7 .....$65.00
Houston S5 .....70.00
Midland,Pa. C18 .....65.00
Munhall,Pa. U5 .....65.00

BILLETS, BLOOMS & SLABS Carbon, Rerolling (NT)

Aliquippa,Pa. J5 .....$64.00
Bessemer,Pa. U5 .....64.00
Bridgeport,Conn. N19 ..69.00
Buffalo R2 .....64.00
Clairton,Pa. U5 .....64.00
Ensley,Ala. T2 .....64.00
Fairfield,Ala. T2 .....64.00
Fontana,Calif. K1 ....72.00
Gary,Ind. U5 .....64.00
Johnstown,Pa. B2 ....64.00
Lackawanna,N.Y. B2 ..64.00
LoneStar,Tex L6 .....70.00
Munhall,Pa. U5 .....64.00
Pittsburgh J5 .....64.00
So.Chicago,Ill. R2, U5..64.00
So.Duquesne,Pa. U5 ...64.00
Youngstown R2 .....64.00

Carbon, Forging (NT)

Aliquippa,Pa. J5 ....$78.00
Bessemer,Pa. U5 .....78.00
Bridgeport,Conn. N19 ..83.00
Buffalo R2 .....78.00
Canton,O. R2 .....80.00
Clairton,Pa. U5 .....78.00
Conshohocken,Pa. A3 ..83.00
Ensley,Ala. T2 .....78.00
Fairfield,Ala. T2 .....78.00
Fontana,Calif. K1 ....86.00
Gary,Ind. U5 .....78.00
Geneva,Utah C11 ....78.00
Houston S5 .....83.00
Johnstown,Pa. B2 ....78.00
Lackawanna,N.Y. B2 ..78.00
LosAngeles B3 .....87.50
Midland,Pa. C18 .....78.00
Munhall,Pa. U5 .....78.00
Pittsburgh J5 .....78.00
Seattle B3 .....91.50
So.Chicago R2,U5,W14 .78.00
So.Duquesne,Pa. U5 ...78.00
So.SanFrancisco B3 ...87.50

Alloy, Forging (NT)

Bethlehem,Pa. B2 ....$86.00
Buffalo R2 .....86.00
Canton,O. R2, T7 ....86.00
Conshohocken,Pa. A3 ..93.00
Detroit R7 .....86.00
Fontana,Calif. K1 ....105.00
Gary,Ind. U5 .....86.00
Houston S5 .....91.00
Ind.Harbor,Ind. Y1 ...86.00
Johnstown,Pa. B2 ....86.00
Lackawanna,N.Y. B2 ..86.00
LosAngeles B3 .....106.00
Massillon,O. R2 .....86.00
Midland,Pa. C18 .....86.00
Munhall,Pa. U5 .....86.00
So.Chicago R2,U5,W14 .86.00
So.Duquesne,Pa. U5 ...86.00
Struthers,O. Y1 .....86.00
Warren,O. C17 .....86.00

ROUNDS, SEAMLESS TUBE (NT)

Buffalo R2 .....$96.50
Canton,O. R2 .....96.50
Cleveland R2 .....96.50
Gary,Ind. U5 .....96.50
So.Chicago R2, W14 ..96.50
So.Duquesne,Pa. U5 ...96.50

SKELP

Aliquippa,Pa. J5 .....4.00
Fontana,Calif. K1 ....4.775
LoneStar,Tex. L6 .....4.30
Munhall,Pa. U5 .....3.90
SparrowsPoint,Md. B2 ..3.90
Warren,O. R2 .....3.90
Youngstown R2, U5 ....3.90

WIRE RODS

AlabamaCity,Ala. R2 ..4.675
Aliquippa,Pa. J5 .....4.675
Alton,Ill. L1 .....4.85
Buffalo B11, W12 ....4.675
Cleveland A7 .....4.675
Donora,Pa. A7 .....4.675
Fairfield,Ala. T2 .....4.675
Fontana,Calif. K1 ....5.475
Houston S5 .....4.925
IndianaHarbor,Ind. Y1 .4.675
Johnstown,Pa. B2 ....4.675
Joliet,Ill. A7 .....4.675
KansasCity,Mo. S5 ....4.925
Kokomo,Ind. C16 ....4.775
Los Angeles B3 .....5.475
Minnequa,Colo. C10 ...4.925
Monessen,Pa. P7 .....4.675
No.Tonawanda,N.Y.B11 4.675
Pittsburg,Calif. C11 ...5.325
Portsmouth P12 .....4.675
Roebling,N.J. R5 .....4.775
So.Chicago,Ill. R2 ....4.675
SparrowsPoint,Md. B2..4.775
Sterling,Ill.(1) N15 ....4.675
Sterling,Ill. N15 .....4.775
Struthers,O. Y1 .....4.675
Torrance,Calif. C11 ...5.475
Worcester,Mass. A7 ..4.975

STRUCTURALS

Carbon Steel Std. Shapes

Ala.City,Ala. R2 .....4.25
Aliquippa,Pa. J5 .....4.25
Bessemer,Ala. T2 ....4.25
Bethlehem,Pa. B2 ....4.30
Birmingham C15 .....4.25
Clairton,Pa. U5 .....4.25
Fairfield,Ala. T2 ....4.25
Fontana,Calif. K1 ....4.90
Gary,Ind. U5 .....4.25
Geneva,Utah C11 .....4.25
Houston S5 .....4.30
Ind.Harbor,Ind. I-2 ....4.25
Johnstown,Pa. B2 ....4.30
KansasCity,Mo. S5 ....4.30
Lackawanna,N.Y. B2 ...4.30
LosAngeles B3 .....4.95
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....4.25
Niles,Calif. P1 .....4.90
Portland,Oreg. O4 ....5.00
Phoenixville,Pa. 4.20
Seattle B3 .....5.00
So.Chicago U5, W14 ....4.25
So.SanFrancisco B3 ....4.90
Torrance,Calif. C11 ....4.95
Weirton,W.Va. W6 ....4.25

Wide Flange

Bethlehem,Pa. B2 .....4.30
Clairton,Pa. U5 .....4.25
Fontana,Calif. K1 .....5.25
Lackawanna,N.Y. B2 ...4.30
Munhall,Pa. U5 .....4.25
Phoenixville,Pa. P4 ....4.30
So.Chicago,Ill. U5 .....4.25

Alloy Std. Shapes

Clairton,Pa. U5 .....5.20
Fontana,Calif. K1 .....6.60
Gary,Ind. U5 .....5.20
Houston S5 .....5.25
Munhall,Pa. U5 .....5.20
So.Chicago,Ill. U5 ....5.20

H.S., L.A. Std. Shapes

Aliquippa,Pa. J5 .....6.40
Bessemer,Ala. T2 .....6.40
Bethlehem,Pa. B2 .....6.45
Clairton,Pa. U5 .....6.40
Fairfield,Ala. T2 .....6.40
Fontana,Calif. K1 ....7.05
Gary,Ind. U5 .....6.40
Geneva,Utah C11 .....6.40
Houston S5 .....6.45
Ind.Harbor,Ind. I-2, Y1.6.40
Johnstown,Pa. B2 .....6.45
KansasCity,Mo. S5 ....6.45
Lackawanna,N.Y. B2 ..6.45
LosAngeles B3 .....7.10
Munhall,Pa. U5 .....6.40
Seattle B3 .....7.15
So.Chicago,Ill. U5, W14..6.40
So.SanFrancisco B3 ....7.05
Struthers,O. Y1 .....6.40

H.S., L.A. Wide Flange

Bethlehem,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ...6.45
Munhall,Pa. U5 .....6.40
So.Chicago,Ill. U5 .....6.40

PILING

BEARING PILES

Munhall,Pa. U5 .....4.25
So.Chicago,Ill. U5 .....4.25

STEEL SHEET PILING

Ind.Harbor,Ind. I-2 ...5.075
Lackawanna,N.Y. B2..5.075
Munhall,Pa. U5 .....5.075
So.Chicago,Ill. U5 ....5.075

PLATES

PLATES, Carbon Steel

Ala.City,Ala. R2 .....4.225
Aliquippa,Pa. J5 .....4.225
Ashland,Ky.(15) A10 ..4.225
Bessemer,Ala. T2 ....4.225
Bridgeport,Conn. N19 ..4.475
Buffalo R2 .....4.225
Clairton,Pa. U5 .....4.225
Claymont,Del. C22 ....4.225
Cleveland J5, R2 .....4.225
Coatesville,Pa. L7 ....4.225
Conshohocken,Pa. A3 ..4.225
Ecorse,Mich. G5 .....4.325
Fairfield,Ala. T2 .....4.225
Fontana,Calif.(30) K1..4.875
Gary,Ind, U5 .....4.225
Geneva,Utah C11 .....4.225
GraniteCity,Ill. G4 ....4.425
Harrisburg,Pa. C5 ....4.225
Houston S5 .....4.275
Ind.Harbor,Ind. I-2,Y1.4.225
Johnstown,Pa. B2 .....4.225
Lackawanna,N.Y. B2 ..4.225
LoneStar,Tex. L6 .....4.55
Mansfield,O. E6 .....4.225
Minnequa,Colo. C10 ...5.075
Munhall,Pa. U5 .....4.225
Newport,Ky. N9 .....4.225
Pittsburgh J5 .....4.225
Riverdale,Ill. A1 .....4.225
Seattle B3 .....5.125
Sharon,Pa. S3 .....4.225
So.Chicago R2,U5,W14 4.225
SparrowsPoint,Md. B2..4.225
Steubenville,O. W10 ...4.225
Warren,O. R2 .....4.225
Weirton,W.Va. W6 .....4.225
Youngstown R2,U5,Y1..4.225

PLATES, Carbon Abras. Resist.

Fontana,Calif. K1 ....6.025
Geneva,Utah C11 .....5.375

PLATES, Wrought Iron

Economy,Pa. B14 .....9.80

PLATES, High-Strength Low-Alloy

Aliquippa,Pa. J5 .....6.45
Bessemer,Ala T2 .....6.45
Clairton,Pa. U5 .....6.45
Cleveland J5, R2 .....6.45
Coatesville,Pa. L7 ....6.45
Conshohocken,Pa. A3 ...6.45
Ecorse,Mich. G5 .....6.55
Fairfield,Ala. T2 .....6.45
Fontana,Calif.(30) K1 ..7.15
Gary,Ind. U5 .....6.45
Geneva,Utah C11 .....6.45
Houston S5 .....6.50
Ind.Harbor,Ind. I-2, Y1.6.45
Johnstown,Pa. B2 .....6.45
Lackawanna,N.Y. B2 ..6.45
LosAngeles B3 .....7.35
Munhall,Pa. U5 .....6.45
Pittsburgh J5 .....6.45
Seattle B3 .....7.35
Sharon,Pa. S3 .....6.45
So.Chicago,Ill. U5, W14.6.45
SparrowsPoint,Md. B2 ..6.45
Youngstown U5, Y1 ....6.45

PLATES, Alloy

Claymont,Del. C22 ....5.80
Coatesville,Pa. L7 ....5.80
Fontana,Calif. K1 .....6.45
Gary,Ind. U5 .....5.80
Houston S5 .....5.85
Ind.Harbor,Ind. Y1 ....5.80
Johnstown,Pa. B2 .....5.80
Munhall,Pa. U5 .....5.80
Newport,Ky. N9 .....5.80
Seattle B3 .....6.70
Sharon,Pa. S3 .....5.80
So. Chicago,Ill. U5,W14.5.80
SparrowsPoint,Md. B2 ..5.80
Youngstown Y1 .....5.80

FLOOR PLATES

Cleveland J5 .....5.275
Conshohocken,Pa. A3 ..5.275
Harrisburg,Pa. C5 ....5.275
Ind.Harbor,Ind. I-2 ...5.275
Munhall,Pa. U5 .....5.275
So.Chicago,Ill. U5 ....5.275

PLATES, Ingot Iron

Ashland c.l. (15) A10..4.475
Ashland l.c.l. (15) A10.4.975
Cleveland c.l. R2 .....4.825
Warren,O. c.l. R2 ....4.825

BARS

BAR, Hot-Rolled Carbon

Ala.City,Ala. R2 .....4.30
Aliquippa,Pa. J5 .....4.30
Alton,Ill. L1 .....4.50
Atlanta A11 .....4.50
Bessemer,Ala. T2 .....4.30
Birmingham C15 .....4.30
Bridgeport,Conn. N19 ..4.55
Buffalo R2 .....4.30
Canton,O. R2 .....4.40
Clairton,Pa. U5 .....4.30
Cleveland R2 .....4.30
Ecorse,Mich. G5 .....4.40
Emeryville,Calif. J7 ....5.05
Fairfield,Ala. T2 .....4.30
FairlessHills,Pa. U5 ....4.45
Fontana,Calif. K1 .....5.00
Gary,Ind. U5 .....4.30
Houston S5 .....4.55
Ind.Harbor,Ind. I-2, Y1.4.30
Johnstown,Pa. B2 .....4.30
Joliet,Ill. P22 .....4.30
KansasCity,Mo. S5 .....4.55
Lackawanna,N.Y. B2 ..4.30
LosAngeles B3 .....5.00
Massillon,O. R2 .....4.40
Midland,Pa. C18 .....4.30
Milton,Pa. M18 .....4.30
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....5.00
N.Tonawanda,N.Y. B11..4.30
Pittsburg,Calif. C11 ....5.00
Pittsburgh J5 .....4.30
Portland,Oreg. O4 ....5.05
Seattle B3, N14, P23 ...5.05
So.Chicago R2,U5,W14 ..4.30
So.Duquesne,Pa. U5 ....4.30
So.SanFran.,Calif. B3 ..5.05
Sterling,Ill.(1) N15 ....4.30
Sterling,Ill. N15 .....4.40
Struthers,O. Y1 .....4.30
Torrance,Calif. C11 ....5.00
Warren,O. R2 .....4.30
Weirton,W.Va. W6 .....4.30
Youngstown R2, U5 ....4.30

BARS, Hot-Rolled Alloy

Bethlehem,Pa. B2 ....5.075
Bridgeport,Conn. N19 ..5.225
Buffalo R2 .....5.075
Canton,O. R2, T7 ....5.075
Clairton,Pa. U5 .....5.075
Detroit R7 .....5.075
Ecorse,Mich. G5 .....5.175
Fontana,Calif. K1 .....6.125
FairlessHills,Pa. U5 ...5.225
Gary,Ind. U5 .....5.075
Houston S5 .....5.325
Ind.Harbor,Ind. I-2, Y1.5.075
Johnstown,Pa. B2 .....5.075
KansasCity,Mo. S5 ....5.325
Lackawanna,N.Y. B2..5.075
LosAngeles B3 .....6.125
Massillon,O. R2 .....5.075
Midland,Pa. C18 .....5.075
So.Chicago R2,U5,W14..5.075
So.Duquesne,Pa. U5 ....5.075
Struthers,O. Y1 .....5.075
Warren,O. C17 .....5.075
Youngstown U5 .....5.075

BARS, H.R. Leaded Alloy

Warren,O. C17 .....5.825

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy

Aliquippa,Pa. J5 .....6.45
Bessemer,Ala. T2 .....6.45
Bethlehem,Pa. B2 .....6.45
Clairton,Pa. U5 .....6.45
Cleveland R2 .....6.45
Ecorse,Mich. G5 .....6.55
Fairfield,Ala. T2 .....6.45
Fontana,Calif. K1 .....7.70
Gary,Ind. U5 .....6.45
Houston S5 .....6.70
Ind.Harb.,Ind. I-2, Y1..6.45
Johnstown,Pa. B2 .....6.45
KansasCity,Mo. S5 ....6.70
Lackawanna,N.Y. B2 ..6.45
LosAngeles B3 .....7.15
Pittsburgh J5 .....6.45
Seattle B3 .....7.20
So. Chicago W14 .....6.45
So.Duquesne,Pa. U5 ....6.45
So.SanFrancisco B3 ....7.20
Struthers,O. Y1 .....6.45
Warren,O. R2 .....6.45
Youngstown U5 .....6.45

BAR SIZE ANGLES; H.R. Carbon

Bethlehem,Pa. B2 .....4.45

BAR SIZE ANGLES; S. Shapes

Aliquippa,Pa. J5 .....4.30
Atlanta A11 .....4.50
Fontana,Calif. K1 .....5.00
Niles,Calif. P1 .....5.00
Pittsburgh J5 .....4.30
Portland,Oreg. O4 ....5.00
SanFrancisco S7 .....4.75

BAR SHAPES, Hot-Rolled Alloy

Clairton,Pa. U5 .....5.20
Gary,Ind. U5 .....5.20
Houston S5 .....5.40
KansasCity,Mo. S5 ....5.40
Youngstown U5 .....5.20

BARS, Cold-Finished Carbon

Ambridge,Pa. W18 .....5.40
BeaverFalls,Pa. M12,R2.5.40
Buffalo B5 .....5.40
Camden,N.J. P13 .....5.80
Carnegie,Pa. C12 .....5.40
Chicago W18 .....5.40
Cleveland A7, C20 ....5.40
Detroit R7 .....5.40
Detroit B5, P17 .....5.60
Donora,Pa. A7 .....5.40
Elyria,O. W8 .....5.40
FranklinPark,Ill. N5 ...5.40
Gary,Ind. R2 .....5.40
GreenBay,Wis. F7 .....5.40
Hammond,Ind. L2, M13.5.40
Hartford,Conn. R2 ....5.90
Harvey,Ill. B5 .....5.40
LosAngeles R2, S30 ....6.80
Mansfield,Mass. B5 ....5.90
Massillon,O. R2 R8 ....5.40
Midland,Pa. C18 .....5.40
Monaca,Pa. S17 .....5.40
Newark,N.J. W18 .....5.80
NewCastle,Pa. (17) B4 ..5.40
Pittsburgh J5 .....5.40
Plymouth,Mich. P5 ....5.60
Putnam,Conn. W18 .....5.90
Readville,Mass. C14 ....5.90
So.Chicago,Ill. W14 ....5.40
SpringCity,Pa. K3 ....5.80
Struthers,O. Y1 .....5.40
Waukegan,Ill. A7 .....5.40
Worcester,Mass. W19 ...5.80
Youngstown F3, Y1 ....5.40

BARS, Cold-Finished Carbon (Turned and Ground)

Cumberland,Md.(5) C19.4.65

BARS, Cold-Finished Alloy

AmbridgePa. W18 ....6.625
BeaverFalls,Pa. M12,R2 6.625
Bethlehem,Pa. B2 ....6.625
Buffalo B5 .....6.625
Camden,N.J. P13 .....6.80
Canton,O. T7 .....6.625
Carnegie,Pa. C12 .....6.625
Chicago W18 .....6.625
Cleveland A7, C20 ....6.625
Detroit R7 .....6.625
Detroit B5, P17 .....6.825
Donora,Pa. A7 .....6.625
Elyria,O. W8 .....6.625
Gary,Ind. R2 .....6.625
GreenBay,Wis. F7 ....6.625
Hammond,Ind. L2,M13.6.625
Hartford,Conn. R2 ....6.925
Harvey,Ill. B5 .....6.625
Lackawanna,N.Y. B2 ..6.625
LosAngeles S30 .....8.30
Mansfield,Mass. B5 ....6.925
Massillon,O. R2, R8 ...6.625
Midland,Pa. C18 .....6.625
Monaca,Pa. S17 .....6.625
Newark,N.J. W18 .....6.80
Plymouth,Mich. P5 ....6.825
So.Chicago W14 .....6.625
SpringCity,Pa. K3 ....6.80
Struthers,O. Y1 .....6.625
Warren,O. C17 .....6.625
Waukegan,Ill. A7 .....6.625
Worcester,Mass. A7 ...6.925
Youngstown F3, Y1 ....6.625

BARS, C.F. Leaded Alloy

Ambridge,Pa. W18 ....7.525
Camden,N.J. P13 .....7.70
Carnegie,Pa. C12 ....7.525
Chicago W18 .....7.525
Cleveland C20 .....7.525
Monaca,Pa. S17 .....7.525
Newark,N.J. W18 .....7.70
SpringCity,Pa. K3 ....7.70
Warren,O. C17 .....7.525

BARS, Reinforcing (To Fabricators)

Ala.City,Ala. R2 .....4.30
Atlanta A11 .....4.50
Birmingham C15 .....4.30
Buffalo R2 .....4.30
Cleveland R2 .....4.30
Emeryville,Calif. J7 ....5.05
Fairfield,Ala. T2 .....4.30
FairlessHills,Pa. U5 ....4.45
Fontana,Calif. K1 .....5.00
Ft.Worth,Tex.(42) T4 ...4.90
Gary,Ind. U5 .....4.30
Houston S5 .....4.55

d.Harbor,Ind. I-2, Y1.4.30
ohnstown,Pa. B2 .....4.30
Het,Ill. P22 .....4.30
ansasCity,Mo. S5 ....4.55
ackawanna,N.Y. B2 ...4.30
osAngeles B3 .....5.00
ilton,Pa. M18 .....4.30
nnequa,Colo. C10 ....4.75
iles,Calif. P1 .....5.00
ittsburg,Calif. C11 ...5.00
ittsburgh J5 .....4.30
ortland,Oreg. O4 .....5.05
andSprings,Okla. S5 ...4.80
eattle B3, N14, P23 ...5.05
o.Chicago R2 .....4.30
o.Duquesne,Pa. U5 ....4.30
o.SanFrancisco B3 ....5.05
parrowsPoint,Md. B2 ..4.30
terling,Ill.(1) N15 ....4.30
terling,Ill. N15 .....4.40
truthers,O. Y1 .....4.30
orrance,Calif. C11 ....5.00
oungstown R2, U5 ....4.30

ARS, Reinforcing (Fabricated; to Consumers)

ohnstown,Pa. ¼-1" B2.5.70
KansasCity,Kans. S5 ...6.50
osAngeles B3 .....5.95
Marion,O. P11 .....5.55
Pittsburgh J5, U8 ....5.72
Seattle B3, N14, P23 ..6.15
So.SanFrancisco B3 ....6.00
SparrowsPt. ½-1" B2 ..5.70
Williamsport,Pa. S19 ..5.60

RAIL STEEL BARS

Avis,Pa. (3) J8 .....4.25
ChicagoHts.(3) C2, I-2..4.20
ChicagoHts.(4) C2, I-2..4.30
Ft.Worth,Tex.(26) T4 ..4.75
Franklin,Pa.(3) F5 ....4.20
Franklin,Pa.(4) F5 ....4.30
Marion,O.(3) P11 .....4.20
Moline,Ill.(3) R2 .....4.30
Tonawanda(3) B12 ....4.15
Tonawanda(4) B12 ....4.30
Williamsport,Pa.(3) S19.4.30

BARS, Wrought Iron

Economy,Pa.(S.R.) B14 10.85
Economy,Pa.(D.R.) B14 13.50
Economy(Staybolt) B14 13.80
McK.Rks(S.R.) L5 ....10.85
McK.Rks.(D.R.)L5.... 14.75
McK.Rks.(Staybolt) L5 16.25

SHEETS

SHEETS, Hot-Rolled Steel (18 Gage and Heavier)

Ala.City,Ala. R2 .....4.05
Allenport,Pa. P7 .....4.05
Ashland,Ky.(8) A10 ....4.05
Cleveland J5, R2 .....4.05
Conshohocken,Pa. A3 ...4.10
Detroit(8) M1 .....4.15
Dravosburg,Pa. U5 ....4.05
Ecorse,Mich. G5 .....4.15
Fairfield,Ala. T2 .....4.05
FairlessHills,Pa. U5 ....4.10
Fontana,Calif. K1 ....4.825
Gary,Ind. U5 .....4.05
Geneva,Utah C11 .....4.15
GraniteCity,Ill. G4 ....4.25
Ind.Harbor,Ind. I-2, Y1.4.05
Kokomo,Ind. C16 .....4.15
Lackawanna,N.Y. B2 ..4.05
Mansfield,O. E6 (37) ...4.05
Mansfield,O. E6 (38) ...4.80
Munhall,Pa. U5 .....4.05
Newport,Ky N9 .....4.05
Niles,O. N12 .....4.05
Pittsburg,Calif. C11 ....4.75
Pittsburgh J5 .....4.05
Portsmouth,O. P12 ....4.05
Riverdale,Ill. A1 .....4.05
Sharon,Pa. S3 .....4.05
So.Chicago,Ill. W14 ....4.05
SparrowsPoint,Md. B2 ..4.05
Steubenville,O. W10 ....4.05
Warren,O. R2 .....4.05
Weirton,W.Va. W6 ....4.05
Youngstown U5, Y1 ....4.05

SHEETS, H.R. (19 Ga. & Lighter)

Ala.City,Ala. R2 .....5.35
Kokomo,Ind. C16 .....5.20
Niles,O. N12 .....4.95

SHEETS, H.R. Alloy

Ind.Harbor,Ind. Y1 ....6.70
Youngstown Y1 .....6.70

SHEETS, H.R. (14 Ga.&Heavier) High-Strength Low-Alloy

Cleveland J5, R2 .....6.10
Conshohocken,Pa. A3 ...6.15
Dravosburg,Pa. U5 ....6.10
Ecorse,Mich. G5 .....6.20
Fairfield,Ala. T2 .....6.10
FairlessHills,Pa. U5 ....6.15
Fontana,Calif. K1 ....6.875
Gary,Ind. U5 .....6.10
Ind.Harbor,Ind. I-2, Y1.6.10
Lackawanna(35) B2 ....6.10
Munhall,Pa. U5 .....6.10
Pittsburgh J5 .....6.10
Sharon,Pa. S3 .....6.10
So.Chicago,Ill. U5 .....6.10
SparrowsPoint(36) B2 ..6.10
Warren,O. R2 .....6.10
Weirton,W.Va. W6 ....6.10
Youngstown U5, Y1 ....6.10

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ....4.30
Cleveland R2 .....4.65
Ind.Harbor,Ind. I-2 ....4.30
Warren,O. R2 .....4.65

SHEETS, Cold-Rolled Steel (Commercial Quality)

Allenport,Pa. P7 .....4.95
Cleveland J5, R2 .....4.95
Conshohocken,Pa. A3 ..5.00
Dravosburg,Pa. U5 ....4.95
Ecorse,Mich. G5 .....5.05
Fairfield,Ala. T2 .....4.95
FairlessHills,Pa. U5 ....5.00
Follansbee,W.Va. F4 ...4.95
Fontana,Calif. K1 .....6.05
Gary,Ind. U5 .....4.95
GraniteCity,Ill. G4 ....5.15
Ind.Harbor,Ind. I-2, Y1.4.95
Lackawanna,N.Y. B2 ...4.95
Middletown,O. A10 ....4.95
Newport,Ky. N9 .....4.95
Pittsburg,Calif. C11 ....5.90
Pittsburgh J5 .....4.95
Portsmouth,O. P12 ....4.95
SparrowsPoint,Md. B2 ..4.95
Steubenville,O. W10 ....4.95
Warren,O. R2 .....4.95
Weirton,W.Va. W6 ....4.95
Youngstown Y1 .....4.95

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2 .....7.50
Dravosburg,Pa. U5 ....7.50
Ecorse,Mich. G5 .....7.60
FairlessHills,Pa. U5 ....7.55
Fontana,Calif. K1 ....8.55
Gary,Ind. U5 .....7.50
IndianaHarbor,Ind. Y1..7.50
Lackawanna(37) B2 ....7.50
Pittsburgh J5 .....7.50
SparrowsPoint(38) B2 ..7.50
Warren,O. R2 .....7.50
Weirton,W.Va. W6 ....7.50
Youngstown Y1 .....7.50

SHEETS, Cold-Rolled Ingot Iron

Middletown,O. A10 ....5.45

SHEETS, Culvert (16 Gage)	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.50	....
Canton,O. R2	6.50	7.10
Dravosburg U5	5.70	....
Fairfield T2	5.70	....
Gary,Ind. U5	5.70	5.95
Ind.Harbor I-2	5.70	5.95
Kokomo,Ind. C16	5.80	....
MartinsFry. W10	5.70	....
Newport,Ky. N9	5.70	5.95
Pitts.,Calif. C11	6.45	....
SparrowsPt. B2	5.70	....

SHEETS, Culvert—Pure Iron

Ashland,Ky. A10 .....6.75
Gary,Ind. U5 .....5.95
MartinsFerry,O. W10 ...5.95

SHEETS, Galvanized Steel Hot-Dipped

Ala.City,Ala. R2 .....5.45‡
Ashland,Ky. A10 .....5.45*
Butler,Pa. A10 .....5.45†
Canton,O. R2 .....5.45‡
Delphos,O. N16 .....6.10‡
Dover,O. R1 .....5.45‡
Dravosburg,Pa. U5 ....5.45†
Fairfield,Ala. T2 .....5.45†
Gary,Ind. U5 .....5.45*
GraniteCity,Ill. G4 ....5.65‡
Ind.Harbor,Ind. I-2 ....5.45†
Kokomo,Ind. C16 .....5.55‡
MartinsFerry,O. W10 ..5.45*
Middletown,O. A10 ....5.45†
Newport,Ky. N9 .....5.45‡
Niles,O. N12 .....5.45‡
Pittsburg,Calif. C11 ..6.20*
SparrowsPt.,Md. B2 ...5.45‡
Steubenville,O. W10 ..5.45‡
Warren,O. R2 .....5.45†
Weirton,W.Va. W6 ....5.45*

*Continuous and noncontinuous. †Continuous. ‡Noncontinuous.

SHEETS, Well Casing

Fontana,Calif. K1 ....6.325

SHEETS, Galvanized High-Strength Low-Alloy

Dravosburg,Pa. U5 ....8.20
SparrowsPoint(30) B2 ..8.20

SHEETS, Galvannealed Steel

Canton,O. R2 .....5.85
Dravosburg,Pa. U5 ....5.85
Kokomo,Ind. C16 .....6.20
Newport,Ky. N9 .....5.85
Niles,O. N12 .....5.85

SHEETS, Galvanized Ingot Iron

Ashland,Ky.(8) A10 ....5.70

SHEETS, Galvanized Ingot Iron (Hot-dipped Continuous)

Ashland,Ky. A10 .....5.70
Butler,Pa. A10 .....5.70
Middletown,O. A10 ....5.70

SHEETS, Electrogalvanized

Cleveland(28) R2 .....6.30
Niles,O.(28) R2 .....6.30
Weirton,W.Va. W6 ....6.15

SHEETS, Aluminum Coated

Butler,Pa. A10 .....8.625

SHEETS, Enameling Iron

Ashland,Ky.(8)A10 ...5.375
Cleveland R2 .....5.375
Dravosburg,Pa. U5 ...5.375
Gary,Ind. U5 .....5.375
GraniteCity,Ill. G4 ....5.575
Ind.Harbor,Ind. I-2 ...5.375
Middletown,O. A10 ....5.375
Niles,O. N12 .....5.375
Youngstown Y1 .....5.375

BLUED STOCK, 29 Gage

Follansbee,W.Va. F4 ..7.375
Follansbee(23) F4 .....6.60
Yorkville,O. W10 .....7.375

SHEETS, Long Terne Steel (Commercial Quality)

Beechbottom,W.Va. W10 5.85
Gary,Ind. U5 .....5.85
Mansfield,O. E6 .....5.85
Middletown,O. A10 ....5.85
Niles,O. N12 .....5.85
Weirton,W.Va. W6 ....5.85

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....6.25

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A6 American Shim Steel Co.
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Steel Div. Colo. Fuel & Iron
B11 Buffalo Bolt Co., Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Corp.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C15 Connors Steel Div. H. K. Porter Co. Inc.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept. Wickwire Spencer Steel Division
C23 Charter Wire Inc.
C24 G. O. Carlson Inc.
C31 Chester Blast Furnace Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver-Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas & Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bross. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-6 Ivins, E., Steel Tube
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp
M4 Mahoning Valley Steel
M6 Mercer Pipe Div., Sawhill Tubular Products
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Div., Jones & Laughlin Steel Corp.
M14 McInnes Steel Co.
M16 Md. Fine&Special. Wire
M17 Metal Forming Corp.
M18 Milton Steel Prod. Div., Merritt-Chapman&Scott

N1 National-Standard Co.
N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Northwest.SteelRoll.Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.
N19 Northeastern Steel Corp.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts.Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P19 Pitts. Rolling Mills
P20 Prod.Steel Strip Corp.
P22 Phoenix Mfg. Co.
P23 Pacific Steel Rolling

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RelianceDiv.,EatonMfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Div., Armco Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S12 Spencer Wire Corp.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S23 Superior Tube Co.
S25 Stainless Welded Products
S26 Specialty Wire Co. Inc.
S30 Sierra Drawn Steel Corp.

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div. Am. Rad. & Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry
U7 Ulbrich Stainless Steels
U8 U. S. Steel Supply Div.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel&Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel

Y1 Youngstown Sheet & Tube

STRIP

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2	4.05
Allenport,Pa. P7	4.05
Alton,Ill. L1	4.225
Ashland,Ky.(8) A10	4.05
Atlanta A11	4.25
Bessemer,Ala. T2	4.05
Birmingham C15	4.05
Bridgeport,Conn. N19	4.35
Buffalo(27) R2	4.05
Conshohocken,Pa. A3	4.10
Detroit M1	4.15
Ecorse,Mich. G5	4.15
Fairfield,Ala. T2	4.05
Fontana,Calif. K1	4.825
Gary,Ind. U5	4.05
Ind.Harbor,Ind. I-2, Y1	4.05
Johnstown,Pa.(25) B2	4.05
Lackaw'na,N.Y.(25) B2	4.05
LosAngeles(25) B3	4.80
Milton,Pa. M18	4.05
Minnequa,Colo. C10	5.15
N.Tonawanda,N.Y. B11	4.05
Pittsburg,Calif. C11	4.80
Portsmouth,O. P12	4.05
Riverdale,Ill. A1	4.05
SanFrancisco S7	5.00
Seattle(25) B3, P23	5.05
Seattle N14	5.05
Sharon,Pa. S3	4.05
So.Chicago,Ill. W14	4.05
So.SanFrancisco(25) B3	4.80
SparrowsPoint,Md. B2	4.05
Sterling(1) N15	4.05
Sterling,Ill. N15	4.15
Torrance,Calif. C11	4.80
Warren,O. R2	4.05
Weirton,W.Va. W6	4.05
Youngstown U5	4.05

STRIP, Hot-Rolled Alloy

Bridgeport,Conn. N19	7.00
Carnegie,Pa. S18	6.70
Fontana,Calif. K1	8.10
Gary,Ind. U5	6.70
Ind.Harbor,Ind. Y1	6.70
LosAngeles B3	7.90
Newport,Ky. N9	6.70
Seattle P23	7.80
Sharon,Pa. S3	6.70
So.Chicago W14	6.70
Youngstown U5, Y1	6.70

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2	6.15
Conshohocken,Pa. A3	6.15
Ecorse,Mich. G5	6.25
Fairfield,Ala. T2	6.15
Fontana,Calif. K1	7.25
Gary,Ind. U5	6.15
Houston S5	6.40
Ind.Harbor,Ind. I-2, Y1	6.15
KansasCity,Mo. S5	6.40
Lackawanna,N.Y. B2	6.15
LosAngeles(25) B3	6.90
Seattle(25) B3, P23	7.15
Sharon,Pa. S3	6.15
So.SanFrancisco(25) B3	6.90
SparrowsPoint,Md. B2	6.15
Warren,O. R2	6.15
Weirton,W.Va. W6	6.15
Youngstown U5, Y1	6.15

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10	4.30
Warren,O. R2	4.65

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6	5.75
Baltimore T6	5.75
Boston T6	6.30
Cleveland A7, J5	5.75
Conshohocken,Pa. A3	5.80
Dearborn,Mich. D3	5.85
Detroit D2, M1, P20	5.85
Dover,O. G6	5.75
Ecorse,Mich. G5	5.85
Follansbee,W.Va. F4	5.75
Fontana,Calif. K1	7.50
FranklinPark,Ill. T6	5.85
Ind.Harbor,Ind. I-2	5.85
Ind.Harbor,Ind. Y1	5.75
Indianapolis C8	5.90
LosAngeles C1	7.80
Middletown,O. A10	5.75
NewBedford,Mass. R10	6.20
NewBritain(10) S15	5.75
NewCastle,Pa. B4, E5	5.75
NewHaven,Conn. A7	6.50
NewHaven,Conn. D2	6.20
NewKensington,Pa. A6	5.75
Pawtucket,R.I. R3	6.40
Pawtucket,R.I. N8	6.30
Pittsburgh J5	5.75
Portsmouth,O. P12	5.75
Riverdale,Ill. A1	5.85
Rome,N.Y.(32) R6	5.75
Sharon,Pa. S3	5.75
SparrowsPt.,Md. B2	5.75
Trenton,N.J.(31) R5	7.30
Wallingford,Conn. W2	6.20
Warren,O. B9, R2, T5	5.75
Weirton,W.Va. W6	5.75
Worcester,Mass. A7	6.60
Youngstown C8, Y1	5.75

STRIP, Cold-Rolled Alloy

Boston T6	12.80
Carnegie,Pa. S18	12.45
Cleveland A7	12.45
Dover,O. G6	12.45
Fontana,Calif. K1	14.55
FranklinPark,Ill. T6	12.45
Harrison,N.J. C18	12.45
Pawtucket,R.I. N8	12.80
Sharon,Pa. S3	12.45
Worcester,Mass. A7	12.75
Youngstown C8	12.90

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland A7, J5	8.60
Dearborn,Mich. D3	8.70
Dover,O. G6	8.60
Ecorse,Mich. G5	8.70
Ind.Harbor,Ind. Y1	8.60

STRIP, Cold-Finished Spring Steel (Annealed)

	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Baltimore T6	5.75	8.35	9.30	11.45	14.15
Boston T6	6.30	8.35	9.30	11.45	14.15
Bristol,Conn. W1	...	...	9.30	11.45	....
Carnegie,Pa. S18	...	8.05	9.00	11.15	13.85
Cleveland A7	5.75	8.05	9.00	11.15	13.85
Cleveland C7	...	8.05	9.00	11.15	13.85
Dearborn,Mich. D3	5.85	8.25	9.20	....	....
Detroit D2	5.85	8.25	9.20	10.95	....
Dover,O. G6	5.85	8.05	9.00	11.15	13.85
FranklinPark,Ill. T6	5.85	8.05	9.00	11.15	13.85
Harrison,N.J. C18	...	...	9.30	11.45	14.15
Indianapolis C8	6.00	8.20	9.00	11.15	13.85
NewBritain,Conn.(10) S15	5.75	8.05	9.00	11.15	13.85
NewCastle,Pa. B4	5.75	8.05	9.00	11.15	....
NewCastle,Pa. E5	5.75	8.05	9.00	11.15	13.85
NewHaven,Conn. D2	6.20	8.35	9.30	11.25	....
NewKensington,Pa. A6	5.75	8.05	9.00	11.15	....
NewYork W3	...	8.35	9.30	11.45	14.15
Pawtucket,R.I. N8	6.30	8.35	9.30	11.45	14.15
Riverdale,Ill. A1	5.85	8.05	9.00	11.15	13.85
Rome,N.Y.(32) R6	5.75	8.05	9.00	10.95	13.25
Sharon,Pa. S3	5.75	8.05	9.00	11.15	13.85
Trenton,N.J. R5	...	8.35	9.30	11.45	14.15
Wallingford,Conn. W2	6.20	8.35	9.30	11.45	14.15
Warren,O. T5	5.75	8.05	9.00	11.15	13.85
Weirton,W.Va. W6	5.75	8.05	9.00	11.15	13.85
Worcester,Mass. A7, T6	6.60	8.35	9.30	11.45	14.15
Youngstown C8	5.85	8.05	9.00	11.15	13.85
Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	12.90	15.60	....
Buffalo W12	...	...	12.90	....	....
FranklinPark,Ill. T6	...	...	13.40	16.10	19.50
Harrison,N.J. C18	...	...	12.90	15.60	19.00
NewYork W3	...	...	12.90	15.60	19.00
Trenton,N.J. R5	...	...	12.90	15.60	19.00
Worcester,Mass. A7, T6	...	...	12.90	15.60	19.00
Worcester,Mass. W12	...	...	12.90	....	....
Youngstown C8	...	...	13.25	15.95	19.35

SILICON STEEL

H.R. SHEETS (22 Ga., cut lengths)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W.Va. W10	....	...	9.10	10.00	11.00
Brackenridge,Pa. A4	....	...	9.10	10.10	11.00
Mansfield,O. E6	8.025	8.50	9.10	10.10	11.00
Newport,Ky. N9	8.025	8.50	9.10	10.10	11.00
Niles,O. N12	8.025	8.50	9.10	10.10	....
Vandergrift,Pa. U5	....	8.50	9.10	10.10	11.00
Warren,O. R2	8.025	8.50	9.10	10.10	11.00
Zanesville,O. A10	....	8.50	9.10	10.10	11.00

C.R. COILS & CUT LENGTHS, (22 Ga.) Fully Processed (Semiprocessed ½c lower)	Field	Armature	Electric	Motor	Dynamo
Brackenridge,Pa. A4	....	....	9.85	10.85	11.75
GraniteCity,Ill. G4	8.425*	8.95*	9.55*	10.55*	....
IndianaHarbor,Ind. I-2	8.225	8.75*	9.35*	....	....
Vandergrift,Pa. U5	....	9.25†	9.85†	10.85†	11.75†
Vandergrift,Pa. U5	8.225*	8.75*	9.35*	10.35*	11.25*
Warren,O. R2	8.225	†9.25	9.85	10.85	11.75
Zanesville,O. A10	....	9.25	9.85	10.85	11.75

H.R. SHEETS (22 Ga., cut lengths)	Transformer Grade T-72	T-65	T-58	T-52
BeechBottom,W.Va. W10	11.95	12.50	13.00	14.00
Brackenridge,Pa. A4	11.95	....	....	....
Newport,Ky. N9	11.95	....	....	....
Vandergrift,Pa. U5	11.95	12.50	13.00	14.00
Zanesville,O. A10	11.95§	12.50§	13.00§	14.00§

C.R. COILS & CUT LENGTHS (22 Ga.)	Grain Oriented T-100	T-90	T-80	T-73	T-72
Brackenridge,Pa. A4	....	15.00	16.60	17.10	....
Butler,Pa. A10	....	....	16.60	17.10	....
Vandergerift,Pa. U5	14.00	15.00	16.60	17.10	12.70
Warren,O. R2	....	....	....	....	12.70‡

*Semiprocessed. †Fully processed only. ‡Coils annealed, semiprocessed ½c lower. §Coils, ¾-cent higher.

Lackawanna,N.Y. B2 8.425
Pittsburgh J5 8.60
Sharon,Pa. S3 8.60
SparrowsPoint,Md. B2 8.425
Warren,O. R2 8.60
Weirton,W.Va. W6 8.60
Youngstown Y1 8.60

STRIP, Electrogalvanized

Cleveland A7	5.75*
Dover,O. G6	5.75*
Riverdale,Ill. A1	5.85*
Youngstown C8	5.75*
Warren,O. B9, T5	5.75*
Weirton,W.Va. W6	5.75*
Worcester,Mass. A7	6.60*

*Plus galvanizing extras.

Strip, Galvanized (Continuous)

Sharon,Pa. S3	6.15
Warren,O. B9	6.15

TIGHT COOPERAGE HOOP

Atlanta A11	4.775
Riverdale,Ill. A1	4.625
Sharon,Pa. S3	4.475
Youngstown U5	4.475

TIN MILL PRODUCTS

TIN PLATE Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.50	$7.75	$8.15
Dravosburg,Pa. U5	7.50	7.75	8.15
Fairfield,Ala. T2	7.60	7.85	8.25
FairlessHills,Pa. U5	7.60	7.85	8.25
Gary,Ind. U5	7.50	7.75	8.15
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.50	7.75	8.15
Niles,O. R2	7.50	7.75	8.15
Pittsburg,Calif. C11	8.25	8.50	8.90
SparrowsPoint,Md. B2	7.60	7.85	8.25
Weirton,W.Va. W6	7.50	7.75	8.15
Yorkville,O. W10	7.50	7.75	8.15

ELECTROTIN (22-27 Gage; Dollars per 100 lb)			
Aliquippa,Pa. J5	6.175	....	....
Niles,O. R2	6.175	6.375	6.575

TINPLATE,American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.80	$9.05
Dravosburg,Pa. U5	8.80	9.05
Fairfield,Ala. T2	8.90	9.15
Fairless,Pa. U5	8.90	9.15
Gary,Ind. U5	8.80	9.05
Ind.Har. I-2, Y1	8.80	9.05
Pitts.Calif. C11	9.55	9.80
Sp.Pt.,Md. B2	8.90	9.15
Weirton,W.Va. W6	8.80	9.05
Yorkville,O. W10	8.80	9.05

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$6.60
Dravosburg,Pa. U5	6.60
Fairfield,Ala. T2	6.70
FairlessHills,Pa. U5	6.70
Gary,Ind. U5	6.60
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2, Y1	6.60
Niles,O. R2	6.60
Pittsburg,Calif. C11	7.35
SparrowsPoint,Md. B2	6.70
Warren,O. R2	6.60
Weirton,W.Va. W6	6.60
Yorkville,O. W10	6.60

HOLLOWARE ENAMELING Black Plate (29 Gage)

Dravosburg,Pa. U5	6.20
Follansbee,W.Va. F4	6.20
Gary,Ind. U5	6.20
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.20
Yorkville,O. W10	6.20

MANUFACTURING TERNES (Special Coated; Base Box)

Dravosburg,Pa. U5	$7.85
Gary,Ind. U5	7.85
Yorkville,O. W10	7.85

MANUFACTURING TERNES (Light Coated, 6 lb; Base Box)

Yorkville,O. W10	$8.75

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.85

WIRE

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	5.75
Aliquippa,Pa. J5	5.75
Alton,Ill. L1	5.925
Atlanta A11	5.95
Bartonville,Ill. K4	5.85
Buffalo W12	5.75
Chicago W13	5.75
Cleveland A7, C20	5.75
Crawfordsville,Ind. M8	5.85
Donora,Pa. A7	5.75
Duluth,Minn. A7	5.75
Fairfield,Ala. T2	5.75
Fostoria,O.(24) S1	5.95
Houston S5	6.00
Jacksonville,Fla. M8	6.27
Johnstown,Pa. B2	5.75
Joliet,Ill. A7	5.75
KansasCity,Mo. S5	6.00
Kokomo,Ind. C16	5.85
LosAngeles B3	6.70
Minnequa,Colo. C10	6.00
Monessen,Pa. P7	5.75
Newark 6-8 ga. I-1	6.40
No. Tonawanda B11	5.75
Palmer,Mass. W12	6.05
Pittsburg,Calif. C11	6.70
Portsmouth,O. P12	5.75
Rankin,Pa. A7	5.75
So.Chicago,Ill. R2	5.75
So.SanFrancisco C10	6.70
SparrowsPoint,Md. B2	5.85
Sterling,Ill.(1) N15	5.75
Sterling,Ill. N15	5.85
Struthers,O. Y1	5.75
Waukegan,Ill. A7	5.75
Worcester,Mass. A7	6.05

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	7.20
Alton,Ill. L1	7.375
Bartonville,Ill. K4	7.30
Buffalo W12	7.20
Cleveland A7	7.20
Donora,Pa. A7	7.20
Duluth,Minn. A7	7.20
Fostoria,O. S1	7.20
Johnstown,Pa. B2	7.20
LosAngeles B3	8.15
Milbury,Mass.(12) N6	7.50
Minnequa,Colo. C10	7.45
Monessen,Pa. P7, P16	7.20
Muncie,Ind. I-7	7.40
Palmer,Mass. W12	7.50
Pittsburg,Calif. C11	8.15
Portsmouth,O. P12	7.20
Roebling,N.J. R5	7.50
So.Chicago,Ill. R2	7.20
So.SanFrancisco C10	8.15
SparrowsPt.,Md. B2	7.30
Struthers,O. Y1	7.20
Trenton,N.J. A7	7.50
Waukegan,Ill. A7	7.20
Worcester A7,J4,T6,W12	7.50

WIRE, Upholstery Spring

Aliquippa,Pa. J5	6.90
Alton,Ill. L1	7.075
Buffalo W12	6.90
Cleveland A7	6.90
Donora,Pa. A7	6.90
Duluth,Minn. A7	6.90
Johnstown,Pa. B2	6.90
KansasCity,Mo. S5	7.50
LosAngeles B3	7.85
Minnequa,Colo. C10	7.075
Monessen,Pa. P7, P16	6.90
NewHaven,Conn. A7	7.20
Palmer,Mass. W12	7.20
Pittsburg,Calif. C11	7.85
Portsmouth,O. P12	6.90
Roebling,N.J. R5	7.20
So.Chicago,Ill. R2	6.90
So.SanFrancisco C10	7.85
SparrowsPoint,Md. B2	7.00
Struthers,O. Y1	6.90
Trenton,N.J. A7	7.20
Waukegan,Ill. A7	6.90
Worcester,Mass. A7	7.20

WIRE, Fine & Weaving (8"Coils)

Alton,Ill. L1	11.375
Bartonville,Ill. K4	11.30
Buffalo W12	11.20
Chicago W13	11.20
Cleveland A7	11.20
Crawfordsville,Ind. M8	11.30
Fostoria,O. S1	11.20
Jacksonville,Fla. M8	11.73
Johnstown,Pa. B2	11.20
Kokomo,Ind. C16	11.20
Minnequa,Colo. C10	10.95
Monessen,Pa. P16	11.20
Muncie,Ind. I-7	11.40
Palmer,Mass. W12	11.50
Roebling,N.J. R5	11.50
So.SanFrancisco C10	11.55
Waukegan,Ill. A7	11.20
Worcester,Mass. A7, T6	11.50

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	9.90
Buffalo W12	9.90
Johnstown,Pa. B2	9.90
Minnequa,Colo. C10	10.025
Monessen,Pa. P16	9.90
Muncie,Ind. I-7	10.10
Portsmouth,O. P12	9.90
Roebling,N.J. R5	10.20
SparrowsPt.,Md. B2	10.00

ROPE WIRE (A)

Alton,Ill. L1	9.75
Bartonville,Ill. K4	9.75
Buffalo W12	9.75
Fostoria,O. S1	9.75
Johnstown,Pa. B2	9.75
Monessen,Pa. P7, P16	9.75
Muncie,Ind. I-7	9.95
Palmer,Mass. W12	10.05
Portsmouth,O. P12	9.75
Roebling,N.J. R5	10.05
SparrowsPt. B2	9.85
Struthers,O. Y1	9.75
Worcester,Mass. T6	9.65
Worcester,Mass. J4	10.05

(A) Plow and Mild Plow; add 0.25c for Improved Plow.

WIRE
(Continued)

WIRE, Tire Bead

Elton,Ill. L1	13.25
Hartonville,Ill. K4	13.25
Monessen,Pa. P16	13.15
Roebling,N.J. R5	13.45

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	7.95
Baltimore T6	8.25
Buffalo W12	7.95
Cleveland A7	7.95
Crawfordsville,Ind. M8	8.05
Dover,O. G6	7.95
Fostoria,O. S1	7.95
FranklinPark,Ill. T6	8.05
Kokomo,Ind. C16	8.05
Massillon,O. R8	7.95
Milwaukee C23	8.15
Monessen,Pa. P7, P16	7.95
Pawtucket,R.I. N8	8.25
Rome,N.Y.(32) R6	7.95
Trenton,N.J. R5	8.25
Worcester A7, T6, W12	8.25

NAILS, Stock

To Dealers & Mfrs. (7)	Col.
AlabamaCity,Ala. R2	137
Aliquippa,Pa. J5	137
Atlanta A11	139
Bartonville,Ill. K4	139
Chicago,Ill. W13	137
Cleveland A9	142
Crawfordsville,Ind. M8	139
Donora,Pa. A7	137
Duluth,Minn. A7	137
Fairfield,Ala. T2	137
Galveston,Tex. D7	145
Houston,Tex. S5	142
Johnstown,Pa. B2	137
Joliet,Ill. A7	137
KansasCity,Mo. S5	142
Kokomo,Ind. C16	139
Minnequa,Colo. C10	142
Monessen,Pa. P7	137
Pittsburg,Calif. C11	156
Rankin,Pa. A7	137
So.Chicago,Ill. R2	137
SparrowsPt.,Md. B2	139
Sterling,Ill.(1) N15	137
Worcester,Mass. A7	143

NAILS, CUT (100 lb keg)

To Dealers (33)	
Conshohocken,Pa. A3	$8.30
Wheeling,W.Va. W10	8.30

STAPLES, Polished Stock

To Dealers & Mfrs. (7)	Col.
Aliquippa,Pa. J5	138
Atlanta A11	140
Bartonville,Ill. K4	139
Crawfordsville,Ind. M8	139
Donora,Pa. A7	138
Duluth,Minn. A7	138
Fairfield,Ala. T2	138
Johnstown,Pa. B2	138
Joliet,Ill. A7	138
Kokomo,Ind. C16	139
Minnequa,Colo. C10	142
Monessen,Pa. P7	137
Pittsburg,Calif. C11	157
Rankin,Pa. A7	138
SparrowsPt.,Md. B2	140
Sterling,Ill.(1) N15	138
Worcester,Mass. A7	144

TIE WIRE, Automatic Baler (14½ Ga.) (Per 97 lb Net Box)

Coil No. 3150	
AlabamaCity,Ala. R2	$8.77
Buffalo W12	8.77
Donora,Pa. A7	8.77
Duluth,Minn. A7	8.77
Joliet,Ill. A7	8.77
Minnequa,Colo. C10	9.02
So.Chicago,Ill. R2	8.77

BALE TIES, Single Loop

	Col.
AlabamaCity,Ala. R2	155
Atlanta A11	157
Bartonville,Ill. K4	157
Crawfordsville,Ind. M8	157
Donora,Pa. A7	155
Duluth,Minn. A7	155
Fairfield,Ala. T2	155
Joliet,Ill. A7	155
Houston S5	160
KansasCity,Mo. S5	160
Kokomo,Ind. C16	157
Minnequa,Colo. C10	160
Pittsburgh,Calif. C11	179
So.SanFran.,Calif. C10	179
SparrowsPoint,Md. B2	157
Sterling,Ill.(1) N15	155

WIRE, Barbed

	Col.
AlabamaCity,Ala. R2	159**
Aliquippa J5	156§
Atlanta A11	164
Bartonville,Ill. K4	165
Crawfordsville,Ind. M8	164
Donora,Pa. A7	159†
Duluth,Minn. A7	159†
Fairfield,Ala. T2	159†
Houston,Tex. S5	164†
Johnstown,Pa. B2	162*
Joliet,Ill. A7	159†
KansasCity,Mo. S5	164†
Kokomo,Ind. C16	161†
Minnequa,Colo. C10	164**
Monessen,Pa. P7	162
Pittsburg,Calif. C11	179†
Rankin,Pa. A7	159†
So.Chicago,Ill. R2	159**
So.SanFrancisco C10	179**
SparrowsPoint,Md. B2	164*
Sterling,Ill.(1) N15	163

WOVEN Fence, 9-15 Ga. Col.

Ala.City,Ala. R2	146**
Ala.City, 17 ga. R2	241**
Ala.City, 18 ga. R2	251**
Aliq'ppa,Pa.9-14½ga.J5	149§
Atlanta A11	151
Bartonville,Ill. K4	152
Crawfordsville,Ind. M8	151
Donora,Pa. A7	146†
Duluth,Minn. A7	146†
Fairfield,Ala. T2	146†
Houston,Tex. S5	151†
Johnstown,Pa.(43) B2	149
Joliet,Ill. A7	146†
KansasCity,Mo. S5	151†
Kokomo,Ind. C16	148†
Minnequa,Colo. C10	151**
Monessen,Pa. 9 ga. P17	149
Pittsburg,Calif. C11	169†
Rankin,Pa. A7	146†
So.Chicago,Ill. R2	146**
Sterling,Ill.(1) N15	150

WIRE (16 Gage)	An'ld Stone	Galv. Stone
Ala.City R2	13.15	14.70**
Bartonville K4	13.25	15.15
Buffalo W12	13.15	
Cleveland A7	13.15	
Crawf'dsville M8	13.25	15.10
Fostoria,O. S1	13.25	14.80†
Johnstown B2	13.15	15.00*
Kokomo C16	13.25	14.80†
Minnequa C10	13.40	15.10**
Palmer,Mas.W12	13.15	14.70†
Pitts.,Calif. C11	13.50	15.05†
So.Chicago R2	13.15	14.70
SparrowsPt. B2	13.25	15.10*
Sterling(1) N15	13.15	15.05
Waukegan A7	13.15	14.70†
Worcester A7	13.45	

WIRE, Merchant Quality (6 to 8 gage)	An'ld Galv.
Ala.City,Ala. R2	6.90 7.30**
Aliquippa J5	6.90 7.425§
Atlanta A11	7.00 7.55
Bartonville(48) K4	7.00 7.575
Buffalo W12	6.90 7.30†
Cleveland A7	6.90
Crawfordsville M8	7.00 7.55
Donora,Pa. A7	6.90 7.30†
Duluth,Minn. A7	6.90 7.30†
Fairfield T2	6.90 7.30†
Houston,Tex. S5	7.15 7.55†
Jacks'ville,Fla. M8	7.425 7.95
Johnstown B2(48)	6.90 7.45*
Joliet,Ill. A7	6.90 7.30†
KansasCity,Mo. S5	7.15 7.55†
Kokomo C16	7.00 7.40†
LosAngeles B3	7.85
Minnequa C10	7.15 7.55**
Monessen P7 (48)	6.90 7.45
Palmer,Mass. W12	7.20 7.60†
Pitts.,Calif. C11	7.85 8.25†
Portsmouth,O. P12	6.90
Rankin A7	6.90 7.30†
So.Chicago R2	6.90 7.30**
So.S.Fran. C10	7.85 8.25**
Spar'wsPt.B2(48)	7.00 7.55*
Sterling(1)(48)N15	6.90 7.475
Struthers,O.(48)Y1	6.90 7.40†
Worcester,Mass.A7	7.20

*Based on 11c zinc; †5c zinc; §10c zinc; ‡Less than 10c zinc; **Subject to zinc equalization extras.

FENCE POSTS

	Col.
ChicagoHts.,Ill. C2, I-2	150
Duluth,Minn. A7	150
Franklin,Pa. F5	150
Johnstown,Pa. B2	150
Marion,O. P11	150
Minnequa,Colo. C10	155
Moline,Ill. R2	155
So.Chicago,Ill. R2	150
Tonawanda,N.Y. B12	150
Williamsport,Pa. S10	150

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS
(Base discounts, per cent off list, f.o.b. midwestern plants)

4 in. and shorter:	
½-in. & smaller diam	2
Over 4 in. through 6 in.:	
½ in. & smaller diam	+3
6 in. and shorter:	
⅝-in. and ⅝-in.	+4
¾-in. and larger	+6
Longer than 6 in.:	
All diameters	+15
Lag bolts, all diams:	
6 in. and shorter	6
Over 6 in. long	+2
Ribbed Necked Carriage	+4
Blank	10
Plow	23
Step, Elevator, Tap and Sleigh Shoe	10
Tire Bolts	+3
Boiler & Fitting-Up Bolts	21

NUTS

H.P. and C.P., regular & heavy:	
Square, all sizes	55
H.P., Hex, regular & heavy:	
¾" and smaller	55
⅞" to 1⅛", inclusive.	58
1¼" to 1½", inclusive	60
1⅝" and larger	55
C.P. Hex regular & heavy:	
All sizes	55
Hot Galv. Nuts (all types):	
¾" or smaller	38
⅞" to 1½", inclusive.	41
Finished Hex Nuts:	
New standard, all sizes	55
Semifinished & Slotted Hex:	
Regular and heavy, all sizes	55

SQUARE HEAD SET SCREWS
(1035 steel; packaged; per cent off list)

1 in. diam x 6 in. and shorter	34
1 in. and smaller diam x over 6 in.	20

HEADLESS SET SCREWS
(Packaged; per cent off list)

No. 10 and smaller	34
¼ in. diam & larger	14
N.F. thread, all diams.	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)	
Plain finish	43
Plated finishes	23

HEXAGON CAP SCREWS
(1020 steel; packaged; per cent off list)

6 in. or shorter:	
¼-in. through ⅝-in.	38
¾-in. through 1 in.	15
Longer than 6 in.:	
¼-in. through ⅝-in.	20
¾-in. through 1 in.	7

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.
Structural ½-in., larger 9.25
⅞-in. under..List less 37%

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..... List

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	19.59	19.00
1¼	13	....	23.21	18.77
1½	13	21.40	25.65	20.75
1¾	13	25.28	30.31	24.52
2	13	28.33	33.97	27.48
2¼	13	31.91	38.26	30.95
2¼	12	34.63	41.52	33.50
2½	12	38.15	45.74	37.00
2¾	12	41.31	49.53	40.07
3	12	44.05	52.82	42.72

RAILWAY MATERIALS

	Standard No. 1	Standard No. 2	Standard All	Tee Rails 60 lb Under
RAILS				
Bessemer,Pa. U5	4.45	4.35	4.40	5.35
Ensley,Ala. T2	4.45	4.35	...	5.35
Fairfield,Ala. T2	...	...	...	5.35
Gary,Ind. U5	4.45	4.35	4.40	...
IndianaHarbor,Ind. I-2	4.45	4.35	4.40	...
Johnstown,Pa. B2	...	...	...	(16)5.35
Lackawanna,N.Y. B2	4.45	4.35	...	5.35
Minnequa,Colo. C10	4.45	4.35	...	5.35
Steelton,Pa. B2	4.45	4.35	...	5.35
Williamsport,Pa. S19	...	...	...	5.35

TIE PLATES

Fairfield,Ala. T2	5.275
Gary,Ind. U5	5.275
Ind.Harbor,Ind. I-2	5.275
Lackawanna,N.Y. B2	5.275
Minnequa,Colo. C10	5.275
Seattle B3	5.425
Steelton,Pa. B2	5.275
Torrance,Calif. C11	5.425

TRACK BOLTS (20) Treated

Cleveland R2	11.50
KansasCity,Mo. S5	11.50
Lebanon,Pa. B2	11.50
Minnequa,Colo. C10	11.50
Pittsburgh O3, P14	11.50
Seattle B3	12.00

AXLES

Ind.Harbor,Ind. S13	6.75
Johnstown,Pa. B2	6.75

JOINT BARS

Bessemer,Pa. U5	5.425
Fairfield,Ala. T2	5.425
Ind.Harbor,Ind. I-2	5.425
Joliet,Ill. U5	5.425
Lackawanna,N.Y. B2	5.425
Minnequa,Colo. C10	5.425
Steelton,Pa. B2	5.425

SCREW SPIKES

Cleveland R2	11.00

STANDARD TRACK SPIKES

Fairfield,Ala. T2	7.30
Ind.Harbor,Ind. I-2, Y1	7.30
KansasCity,Mo. S5	7.30
Lebanon,Pa. B2	7.30
Minnequa,Colo. C10	7.30
Pittsburgh J5	7.30
Seattle B2	7.80
So.Chicago,Ill. R2	7.30
Struthers,O. Y1	7.30
Youngstown R2	7.30

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron: 98+% Fe, annealed.	15.25
Unannealed:	
Minus 100 mesh	11.75
Minus 35 mesh	9.25
Minus 20 mesh	9.00
Swedish, c.i.f. N. Y., c.l., in bags	11.25
Domestic (Swedish), f.o.b. Riverton, N.J., in bags	9.50
Canadian, f.o.b. shipping point	9.50
Electrolytic iron:	
Melting stock, 99.91% Fe, irregular fragments of ⅛ in. x 1.3 in.	21.00
Annealed, 99.5% Fe.	36.50
Unannealed (99+% Fe)	32.50
Unannealed (99+% Fe) (minus 325 mesh)	52.00
Powder Flakes (minus 16, plus 100 mesh)	31.00
Carbonyl Iron: 97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum: Atomized, 500 lb drums, frght. allowed Carlots	32.20
Ton lots	34.20
Antimony, 500 lb lots	32.00*
Brass, 5000-lb lots	33.00-43.00†
Bronze, 5000-lb lots	54.25-57.25†
Copper: Electrolytic	13.75*
Reduced	13.75*
Lead	7.50*
Manganese: Minus 35 mesh	61.00
Minus 100 mesh	67.00
Minus 200 mesh	72.00
Nickel, unannealed	94.00
Nickel-Silver, 5000-lb lots	49.75-57.25
Phosphor-Bronze, ¼-ton lots	58.50
Silicon	43.50
Solder	7.00*
Stainless Steel, 302	94.00
Stainless Steel, 316	$1.25
Tin	14.50*
Zinc, 5000-lb lots	17.75-31.50‡
Tungsten Melting grade, 99% 60 to 200 mesh	Dollars 4.30-4.40
Chromium, electrolytic 99.2% Cr min.	3.50

*Plus cost of metal. †Depending on composition. ‡Depending on mesh. §70% Cu, 20% Zn, 10% Ni; **64% Cu, 18% Zn, 18% Ni.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛" to 1 7/16"; 1 7/16" to 1 15/16" 4.78c; 1 15/16" to 7 5/16" 5.15c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 Ga. and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass., base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅜" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25 off for untreated.
(21) New Haven, Conn., base.
(22) Deld San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 4.95c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; for universal mill add 0.45c for carbon, add 0.40c for alloy and 0.35c. H.S.-L.A.
(31) Widths over ⅝-in.; 6.40c for widths ⅝-in. and under by 0.125 in. and thinner.
(32) Buffalo base.
(33) To jobbers, deduct 20c.
(34) 9.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 13 Ga. & heavier; 60" & narrower.
(38) 14 Ga. & lighter; 48" & narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Mill lengths, f.o.b. mill; deld. to mill zone or within switching limits, 5.10c.
(43) 9-14½ Ga.
(48) 6-7 Ga.

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	2	2½	3	3½	4	5	6
List Per Ft	37c	58.5c	76.5c	92c	$1.09	$1.48	$1.92
Pounds Per Ft	3.68	5.82	7.62	9.20	10.89	14.81	19.18

	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5
Ambridge, Pa. N2	13.5	..	17.5	...	20	...	21.5	...	21.5	...	20.75	...	23.25	...
Lorain, O. N3	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5
Youngstown Y1	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2	13.5	+3	17.5	+0.25	20	2.25	21.5	3.75	21.5	3.75	20.75	3	23.25	5.5

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Size—Inches	⅛	¼	⅜	½	¾	1	1¼
List Per Ft	5.5c	6c	6c	8.5c	11.5c	17c	23c
Pounds Per Ft	0.24	0.42	0.57	0.85	1.13	1.68	2.28

	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Alton, Ill. L1	...	...	....	....	....	....	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25
Benwood, W. Va. W10	24	+4.5	15.25	+10.25	7.25	+17.25	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Butler, Pa. F6	25	+3.5	17	+ 8.5	9.5	+15	....	..	....	...	....	..	....	....
Etna, Pa. N2	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Fairless Hills, Pa. N3	...	...	....	....	....	....	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25
Fontana, Calif. K1	...	...	....	....	....	....	10.75	+6.5	13.75	+2.5	16.25	1	18.75	2.25
Ind. Harbor, Ind. Y1	...	...	....	....	....	....	22.75	5.5	25.75	9.5	28.25	13	30.75	14.25
Lorain, O. N3	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Sharon, Pa. S4	25	+3.5	17	+ 8.5	9.5	+15	....	..	....	...	....	..	....	....
Sharon, Pa. M6	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Sparrows Pt., Md. B2	23	+5.5	15	+10.5	7.5	+17	21.75	4.5	24.75	8.5	27.25	12	29.75	13.25
Youngstown R2, Y1	...	...	....	....	....	....	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25
Wheatland, Pa. W9	23	+5.5	15	+10.5	7.5	+17	23.75	6.5	26.75	10.5	29.25	14	31.75	15.25

Size—Inches	1½	2	2½	3	3½	4
List Per Ft	27.5c	37c	58.5c	76.5c	92c	$1.09
Pounds Per Ft	2.73	3.68	5.82	7.62	9.20	10.89

	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*	Blk	Galv*
Aliquippa, Pa. J5	32.25	16.25	32.75	16.75	34.25	17	34.25	17	....	...	....	...
Alton, Ill. L1	30.25	14.25	30.75	14.75	32.25	15	32.25	15	....	...	....	...
Benwood, W. Va. W10	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75
Etna, Pa. N2	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75
Fairless Hills, Pa. N3	30.25	14.25	30.75	14.75	32.25	15	32.25	15	23.5	5.75	23.5	5.75
Fontana, Calif. K1	19.25	3.25	19.75	3.75	21.25	4	21.25	4	12.5	+5.25	12.5	+5.25
Ind. Harbor, Ind. Y1	31.25	15.25	31.75	15.75	33.25	16	33.25	16	24.5	6.75	25.5	6.75
Lorain, O. N3	32.25	16.25	32.75	16.75	34.25	17	34.25	17	....	...	....	...
Sharon, Pa. M6	32.25	16.25	32.75	16.75	34.25	17	34.25	17	....	...	....	...
Sparrows Pt., Md. B2	30.25	14.25	30.75	14.75	32.25	15	32.25	15	23.5	5.75	23.5	5.75
Youngstown R2, Y1	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75
Wheatland, Pa. W9	32.25	16.25	32.75	16.75	34.25	17	34.25	17	25.5	7.75	25.5	7.75

*Galvanized pipe discounts based on current price of zinc (12.00c; East St. Louis).

Stainless Steel

Representative prices, cents per pound; subject to current lists of extras

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.75	21.00	30.00	34.75	30.25	35.75	37.75	41.75	38.75
302	17.75	23.25	30.25	35.00	32.50	36.00	38.00	42.00	42.00
302B	19.00	25.00	31.00	35.00	35.50	36.00	38.00	45.25	45.25
303	....	25.25	32.75	37.75	....	38.75	40.25	46.00	46.00
304	19.00	24.50	31.75	36.75	35.00	38.00	40.50	44.50	44.50
304L	....	....	36.75	41.75	40.00	43.00	45.50	49.50	49.50
305	20.50	26.50	33.50	37.25	38.00	38.00	41.00	47.50	47.50
308	20.75	27.25	36.25	41.75	39.00	43.00	47.00	49.00	49.00
309	27.75	36.00	44.00	50.50	50.50	51.75	55.00	63.25	63.25
309S	29.75	38.75	48.00	55.75	55.25	56.75	60.25	69.75	69.75
310	35.00	45.25	58.75	68.25	64.75	69.50	71.00	74.25	74.25
314	....	....	....	....	....	....	71.00	....	....
316	29.75	38.00	48.25	56.25	55.00	57.25	60.50	64.50	64.50
316L	....	....	53.25	61.25	60.00	62.25	65.50	69.50	69.50
317	35.00	45.50	59.25	68.75	69.50	70.25	72.75	79.00	79.00
321	23.50	30.25	36.00	41.50	41.75	42.75	46.50	51.25	51.25
330	....	....	61.50	....	....	72.00	73.25	81.25	81.25
16-8CbTa	29.25	38.25	46.00	52.25	53.00	53.75	58.50	66.50	66.50
403	....	....	27.00	30.75	....	32.00	34.25	....	....
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	39.75	39.75
410	14.00	18.25	24.00	27.25	26.25	28.75	30.00	34.25	34.25
414	....	....	24.50	....	....	29.25	30.50	35.25	35.25
416	....	....	24.50	28.25	....	29.25	....	....	....
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	52.75	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	34.75	34.75
430F	....	....	25.00	28.75	....	29.75	....	....	....
431	15.00	19.25	25.00	28.75	28.00	29.75	31.00	35.75	35.75
446	....	....	33.50	38.25	50.25	39.50	40.75	59.75	59.75

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; Alloy Tube Div., Carpenter Steel Co.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg-Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Tube Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co.; Sharon Steel Corp.; Sawhill Tubular Products Inc.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; Ulbrich Stainless Steels; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

Clad Steel

	Plates, Carbon Base 10%	Plates, Carbon Base 20%	Sheets, Carbon Base 20%
Stainless:			
302	....	....	28.00
304	28.30	33.60	29.75
304-L	30.30	35.50	....
310	41.30	47.00	....
316	33.40	38.80	42.75
316-L	37.80	43.30	....
316-CB	38.90	45.50	....
321	30.00	35.30	34.25
347	32.20	38.60	44.25
405	23.90	31.10	....
410	23.40	30.60	....
430	23.40	30.60	24.25
Inconel	47.90	63.90	....
Nickel	39.50	54.10	....
Monel	40.80	54.80	....
L-Nickel	41.70	58.50	....
Copper*	....	....	46.00

	Strip, Carbon Base, Cold Rolled, 10%	Strip, Carbon Base, Cold Rolled, Both Sides
Copper*	26.60	33.00

*Deoxidized. Production points: Stainless-clad sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont, Del. C22, Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville L7; copper-clad strip, Carnegie, Pa. S18.

Tool Steel

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.26	5% Cr Hot Work	0.405
Extra Carbon	0.31-.315	W-Cr Hot Work	0.425
Special Carbon	0.37	V-Cr Hot Work	0.445
Oil Hardening	0.405	Hi-Carbon-Cr	0.73

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	...	4.030
18.25	4.25	1	4.75	...	2.245-2.415
18	4	2	9	...	2.615
18	4	2	....	...	1.705
18	4	1	....	...	1.540
14	4	2	5	...	2.185
13.75	3.75	2	5	...	2.185
13.5	4	3	....	...	1.805
9	3.5	..	....	...	1.115
6	4	2	....	5	1.045
6	4	3	....	6	1.290
1.5	4	1	....	8.5	0.900

Tool steel producers include; A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

Pig Iron

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Birmingham District				
AlabamaCity,Ala. R2	52.38	52.88	....	....
Birmingham R2	52.38	52.88	....	....
Birmingham U6	....	52.88	56.50†	....
Gadsden,Ala. R2	52.38	52.88	....	....
Cincinnati, deld.	....	60.58	....	....
Buffalo District				
Buffalo H1, R2	56.00	56.50	57.00	57.50
Tonawanda,N.Y. W12	56.00	56.50	57.00	57.50
No.Tonawanda,N.Y. T9	....	56.50	57.00	57.50
Boston, deld.	66.65	67.15	67.65	....
Rochester,N.Y., deld.	59.02	59.52	60.02	....
Syracuse,N.Y., deld.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Chicago R2	56.00	....	56.50	....
Gary,Ind. U5	56.00	....	56.50	....
IndianaHarbor,Ind. I-2	56.00	....	56.50	....
So.Chicago,Ill. W14, Y1	56.00	56.50	56.50	....
So.Chicago,Ill. U5	56.00	....	56.50	57.00
Milwaukee, deld.	58.17	58.67	58.67	59.17
Muskegon,Mich., deld.	....	62.80	62.80	....
Cleveland District				
Cleveland A7, R2	56.00	56.50	56.50	57.00
Akron,O., deld.	58.75	59.25	59.25	59.75
Lorain,O. N3	56.00	....	....	57.00
Mid-Atlantic District				
Bethlehem,Pa. B2	58.00	58.50	59.00	59.50
NewYork, deld.	....	62.28	62.78	....
Newark, deld.	61.02	61.52	62.02	62.52
Chester,Pa. C31	....	53.50	54.00	....
Philadelphia, deld.	....	55.16	55.66	....
Steelton,Pa. B2	58.00	58.50	59.00	59.50
Swedeland,Pa. A3	58.00	58.50	59.00	59.50
Philadelphia, deld.	59.66	60.16	60.66	61.16
Troy,N.Y. R2	58.00	58.50	59.00	59.50
Pittsburgh District				
NevilleIsland,Pa. P6	56.00	56.50	56.50	57.00
Pittsburgh (N&S sides), Aliquippa, deld.	....	57.87	57.87	58.37
McKeesRocks, deld.	....	57.54	57.54	58.04
Lawrenceville,Homestead, Wilmerding,Monaca, deld.	....	58.16	58.16	58.66
Verona,Trafford, deld.	58.19	58.69	58.69	59.19
Brackenridge, deld.	58.45	58.95	58.95	59.45
Bessemer,Pa. U5	56.00	....	56.50	57.00
Clairton,Rankin,So.Duquesne,Pa. U5	56.00	....	....	....
McKeesport,Pa. N3	56.00	....	....	57.00
Midland,Pa. C18	56.00	....	....	....

	Basic	No. 2 Foundry	Malle-able	Besse-mer
Youngstown District				
Hubbard,O. Y1	....	....	56.50	....
Sharpsville,Pa. S6	56.00	56.50	56.50	57.00
Youngstown Y1	....	....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield,O., deld.	60.90	....	61.40	61.90
Duluth I-3	56.00	56.50	56.50	57.00
Erie,Pa. I-3	56.00	56.50	56.50	57.00
Everett,Mass. E1	60.50	61.00	61.50	....
Fontana,Calif. K1	62.00	62.50	....	....
Geneva,Utah C11	56.00	56.50	....	....
GraniteCity,Ill. G4	57.90	58.40	58.90	....
Ironton,Utah C11	56.00	56.50	....	....
LoneStar,Texas L6	52.00	52.50*	52.50	....
Minnequa,Colo. C10	58.00	59.00	59.00	....
Rockwood,Tenn. T2	....	52.50*	56.50	....
Toledo,O. I-3	56.00	56.50	56.50	57.00
Cincinnati, deld.	61.76	62.26	....	....

*Low phos, southern grade. †Phos, 0.30 max.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, inclusive, add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1 for each 0.5% Si; 75 cents for each 0.50% Mn over 1%)

Jackson,O. G2, J1	$65.00
Buffalo H1	66.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.50 Si to 18%; $1 for each 0.50% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$80.50
Keokuk,Iowa, (Open-hearth & Fdry, freight allowed K2)	85.00
Keokuk, O.H. & Fdry, 12½ lb piglets, 16% Si, frgt allowed K2	88.00

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland A7 (Intermediate)	$61.00
Lyles,Tenn. T3	70.00
Rockwood,Tenn. T3	70.00
Steelton,Pa. B2	64.00
Philadelphia, deld.	67.55
Troy,N.Y. R2	64.00

Warehouse Steel Products

Representative prices, cents per pound subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except Buffalo, 25 cents; Birmingham and St. Paul, 15 cents; Philadelphia, New York, Boston, San Francisco and Los Angeles, 10 cents; Atlanta, Houston, Seattle, Spokane, Wash., no charge.

	SHEETS				STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Galv. 10 Ga.†	Stainless Type 302	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Atlanta	6.79	7.75	8.37	43.43	7.05	...	6.92	8.89	....	7.08	7.09	8.83
Baltimore	6.02	7.51	7.79	....	6.69	...	6.68	8.02[6]	12.54	6.72	6.37	7.76
Birmingham	6.35	7.35	8.25[2]	....	6.60	...	6.50	9.10	....	6.65	6.65	8.45
Boston	7.23	8.23	9.57	45.28[9]	7.47	...	7.20	8.60	12.60	7.49	7.37	8.50
Buffalo	6.30	7.40	8.84	....	6.65	...	6.45	7.40	12.30	6.67	6.60	7.85
Charlotte, N. C.	6.95	7.80	8.69	....	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.38	7.38	8.30	46.05	6.62	...	6.51	7.25	12.05	6.69	6.52	7.64
Cincinnati	6.49	7.37	8.30	46.10	6.86	...	6.75	7.55	12.30	6.86	6.81	7.89
Cleveland	6.38	7.38	8.25	46.16	6.72	...	6.57	7.35	12.11	7.02	6.69	7.81
Detroit	6.57	7.57	8.58	43.50	6.90	7.36	6.79	7.54	12.25	7.16	6.80	7.83
Erie, Pa.	6.35	7.38	8.30	....	6.70	...	6.50	7.45[4]	....	6.69	6.52	7.64
Houston	7.35	7.80	9.99	....	7.70	9.30	7.70	9.30	....	7.60	7.35	8.75
Los Angeles	7.50	9.35	9.95	50.75	7.85	11.85	7.45	10.15	13.45	7.65	7.45	9.55
Milwaukee	6.47	7.47	8.39	....	6.71	...	6.60	7.44	12.14	6.86	6.61	7.73
Moline, Ill.	6.73	7.73	8.65	....	6.97	...	6.86	7.60	....	7.04	6.87	...
New York	6.97	7.91	8.79	44.95	7.56	...	7.37	8.73[6]	12.43	7.38	7.27	8.68
Norfolk, Va.	7.00	...	...	....	7.10	...	7.10	8.60	....	7.10	7.10	7.95
Philadelphia	6.19	7.44	8.26	41.98[9]	6.96	8.60	6.74	7.86[8]	12.26	6.54	6.49	7.51**
Pittsburgh	6.38	7.38	8.30	46.00	6.72	...	6.51	7.35	12.05	6.69	6.52	7.64
Portland, Oreg.	7.00	7.75	9.10	48.50	7.25	...	7.05	10.20	14.00	7.00	6.85	8.75
Richmond, Va.	6.43	7.39	8.67	....	6.77	...	6.71	8.33	....	7.08	6.65	8.08
St. Louis	6.67	7.67	8.59	43.89	6.91	...	6.80	7.64[8]	12.34	7.09	6.81	7.93
St. Paul	7.04	8.04	8.96	....	7.28	...	7.17	8.01	....	7.35	7.18	8.30
San Francisco	7.70	9.10	9.60	51.65	7.95	...	7.50	10.20	13.50	7.65	7.55	9.60
Seattle	8.10	9.80	10.15	51.00	8.20	...	7.80	10.95	13.80	7.75	7.80	9.60
Spokane	8.35	9.65[7]	10.15	....	7.80	...	7.80	10.85§§	14.55	7.45	7.55	9.60
Washington	6.70	7.99	7.97	....	7.37	...	7.38	9.09	....	7.31	7.05	8.16

*Prices do not include gage extras; †prices include gage and coating extras, based on 11.50-cent zinc except in Birmingham (coating extra excluded); ‡includes 35-cent special bar quality extras; **½-in. and heavier; ††as annealed; §§under ½-in.

Base quantities, 2000 to 4999 lb except as noted: Cold-rolled strip and cold-finished bars, 2000 lb and over except in Seattle, 2000 to 999 lb and in Los Angeles, 6000 lb and over; stainless sheets, 8000 lb except in New York and Boston, 10,000 lb, and in San Francisco, 2000 to 4999 lb; hot-rolled products on West Coast, 2000 to 9999 lb; [2]—500 to 9999 lb; [4]—4000 lb and over; [5]—1000 to 1999 lb; [6]—1000 lb and over; [7]—1500 to 3999 lb; [8]—2000 to 3999 lb; [9]—f.o.b. local delivery in lots of 10,000 lb and over.

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The Cities Service Heat Prover Works Here

THE PORTABLE HEAT PROVER is supplied and maintained free by Cities Service. It helps control combustion efficiency by allowing rapid, continuous sampling, simultaneous readings and direct measurement of oxygen and combustibles. Inland uses the Heat Prover for its blast furnaces, open hearths, soaking pits, continuous galvanizing line, reheat furnaces, purging operations, annealers, and boilers on ore ships.

CITIES SERVICE

QUALITY PETROLEUM PRODUCTS

Reynolds Metals Co.

ALUMINUM WIRE

Up 31.4%

in First 4 Months

1954	1955
2,731,478	4,195,250
2,801,802	3,445,184
2,846,755	4,009,475
3,177,161	3,540,479
11,557,196 lb	15,190,388 lb

In 4 months of 1955, shipments of aluminum wire, other than conductor, are 41 per cent of 1954's total of 37,696,979 lb

Source: The Aluminum Association

Going into products like scrub pads and zippers, it's a . . .

Shape with a Future

SALES of aluminum manufacturers' wire have doubled in the last three years. That pace (see figures above) is continuing into 1955.

Comparative figures are available for only the first four months of the year, but it seems clear to industry men that this year will continue to push ahead of 1954 by almost a third. Sales officials of Aluminum Co. of America, Pittsburgh, say the industry's second quarter was on a level with the first. They expect some easing in the third quarter, but increased business in the fourth will make up for it.

Trip to Moon—Last year's production of about 37.5 million lb of aluminum wire would be enough to stretch 4½-times from the earth to the moon. This production is made possible partly because of the metal's competitive position in price with other metals. Alcoa officials state that as other metals become more expensive in relation to aluminum, the lighter metal makes more inroads into products which traditionally used the heavier metals. Its weight, finish and resistance to rust are also in its favor.

Edward C. Manix, vice president of Nichols Wire & Aluminum Co., Davenport, Iowa, says that there is better than a 50-50 chance that you will find the scrubbing pads in the kitchen, the TV antenna guy wires, the air filter in your automobile, zippers in your clothes, screens on the windows and even the needles in the wife's knitting basket are made of aluminum. More rivets, screws and nails are being made of aluminum than ever before (STEEL, June 20, p. 159). "We've never seen anything like aluminum manufacturers' wire in terms of rapid and healthy growth," Mr. Manix says. "So great is the demand . . . that carload shipments representing thousands of miles of wire are becoming common."

By Plane—In an era when rapid delivery is stressed, aluminum wire has a competitive edge. It weighs only about a third as much as common wire of the same dimensions, so it is economical to send it by air. Nichols recently air-shipped 10 miles of 0.010-in. aluminum wire. Its weight: Exactly 5 lb.

Aluminum, as well as most other wire materials, can be drawn into almost any shape or gage. Standard shapes are round, square, hexagonal, rectangular, octangular and crimped round. But most manufacturers will draw other shapes to the customer's specifications. Mr. Manix indicates the range of gages when he says: "Nichols will draw aluminum wire in any diameter from 0.010-in. up to almost 0.50-in. in a wide range of alloys and tempers."

Marching Along—What the ultimate demand for this light product will be is anybody's guess. Mr. Manix says: "It looks to us as if aluminum manufacturers' wire is just beginning to get its stride."

Steel Bars . . .

Bar Prices, Page 106

Fabricators have been pressing bar mills for shipments on old orders while awaiting labor developments. Most users expect to pay higher prices for bars this month, the hike depending on the wage increase granted the steelworkers.

Hot-rolled carbon bar sellers are beginning to open books officially for beyond-September-shipment.

Meanwhile, large rounds, 3 in

and over, and of the hot-top classification, are in tightest supply in the East.

While some of these larger rounds are going into ammunition, principal requirements are for shafting.

Some alloy tonnage is still available for third quarter shipment against new orders, but the supply is dwindling rapidly. Currently, shipments of cold-finished bars are as much as 30 days behind schedule with some producers. Sellers of hot-rolled are booking for October delivery on some sizes in New England.

U. S. Steel Corp. issued revised specification and tolerance extras for hot-rolled bars on specification MIL-S-16974D (Navy), effective June 22.

Wire . . .

Wire Prices, Pages 108 & 109

Some of the wire mills are down for mass vacations, but the practice is not being universally observed this year, certainly not on the scale of recent years.

Demand for high carbon wire is holding up surprisingly well. One maker reports deliveries are running about eight weeks. In general, there are no important arrearages as the third quarter opens, sellers being fairly current with delivery promises.

The mills have been operating close to capacity to get out June tonnage, and it is reported July order books are well filled.

Springmakers are busy. In New England those supplying the automotive industry are producing for 1956 models where changes do not materially affect springs.

Warehouse . . .

Warehouse Prices, Page 111

Distributors reported a surge of orders as the second quarter closed. Demand is heaviest for bars, plates, structural shapes and sheets. June was the best month so far this year for most warehouses, with bookings slightly exceeding the May record.

Although gratified by the upturn, distributors expect the market to settle back in late July and August while the vacation period is in full swing. Part of the recent increase in business is traced to inventory building in anticipation of higher prices.

Sheets, Strip . . .

Sheet & Strip Prices, Pages 107 & 108

Sheetmakers are moving cautiously in making fourth quarter commitments, but there is a definite pickup in scheduling under way. The mills are booked solidly for third quarter. So, rather than remain out of the market, especially now that the second quarter has ended, they are accepting some tonnage on a firm delivery basis.

Most producers will have a carryover going into the fourth quarter, as was the case as they entered the present delivery period. Indications are at least one month will be blanked out in the last quarter to accommodate the overflow from the third period. Consequently, the mills do not plan to enter much new tonnage for October. Some estimate they will have no more than two weeks available of capacity that month, if that much. This applies to cold-rolled and galvanized sheets in particular, but fairly substantial arrearages also are indicated in hot-rolled sheets—a little tonnage is available for late September shipment. Also, some hot and cold-rolled strip is open for September delivery.

The situation in sheet and strip specialties varies. On enameling stock and electrical sheets, delivery promises run late in the fourth quarter. Promises on stainless are not so extended.

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the first new zinc phosphate coatings in twenty years!

Cowles TY-BONDS . . . amorphous and non-sludging . . . are *not* revisions of old-type coatings. They are completely new coatings—completely new formulations.

Cowles TY-BONDS form tight, hard, clean coatings . . . even the most severe bending, flexing or twisting cannot remove TY-BONDS. They cover the metal completely, no pin-points of metal are left unprotected. Old-type coatings leave as much as 60% exposed to corrosion!

Cowles TY-BONDS are economical because they are non-sludging. There is remarkably little waste . . . more than 90% goes into the surface treatment. TY-BONDS save time by reducing coating cycles and tank clean-outs, and meet all government specifications.

Your Cowles Technical Representative will be happy to give you complete information on the uses and applications of Cowles TY-BOND zinc phosphate coatings. Write or call today.

Cowles CHEMICAL COMPANY

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Pittsburgh mills note a moderate decline in strip orders as the third quarter opens. This, however, is considered normal for summer.

Despite heavy shipments, production is expected to slip below capacity in July and August. Much needed equipment repairs will slow output some. Also, hot weather and vacation interruptions will force curtailments.

With little open space in order books until fourth quarter, the sheetmakers anticipate little difficulty in passing along to consumers, through higher prices, whatever wage increase is granted the steelworkers.

Tubular Goods . . .

Tubular Goods Prices, Page 110

Tubemakers anticipate an active third quarter. Oil country goods interests are well booked through the summer, but they are not accepting all fourth quarter orders. Some are postponing the opening of books for that period a few weeks. There is enough momentum to sales to assure high-level shipments through remainder of this year.

The continuing strong migration to the West Coast is lending support to the housing boom in that area, with a consequent high demand for pipe.

Ohio Fuel Gas Co., Columbus, O., plans 19 miles of natural gas pipeline and a metering station in north-central Ohio. The project includes 18.9 miles of 16-in. pipe in Hardin and Allen counties.

Another pipeline job is that proposed by Texas Eastern Transmission Corp., Shreveport, La. This involves the laying of a 481.5-mile gas line to partly replace the company's Little Inch line which will be converted to transporting petroleum products. Construction starts within 60 days.

Construction of 16 miles and 32 miles of pipeline, respectively, is projected by the Clinchfield Coal Corp., Dante, Va., and the Kentucky West Virginia Gas Co., Ashland, Ky., for transportation of gas from southwestern Virginia.

Also, the Texas Gas Transmission Corp., Owensboro, Ky., is planning 198 miles of gas transmission line and an additional 20,270-hp compressor capacity along its system in Louisiana, Arkansas, Mississippi, Tennessee, Kentucky and Indiana.

The Southern California Gas Co. and the Southern Counties Gas Co., Los Angeles, have asked the California Public Utilities Commission for permission to construct a 30-in. gas pipeline to bring additional natural gas into California.

Plates . . .

Plate Prices, Page 106

Already strong, plate demand is being boosted by a long deferred pickup in railroad specifications. Further increase on this score the rest of the year is indicated as heavier car inquiry is in prospect.

Having held orders off so long, railroads entering the market for cars are pressing for early steel shipments. They are finding that plate makers and other suppliers of car steel are booked up solidly through the third quarter.

Also, there are signs of betterment in ship work.

Buying has been brisk for fabricated line pipe, oil tanks, general purpose industrial equipment, and nonresidential construction. Also, requirements for construction machinery and related equipment, weldments for metalworking equipment and a considerable diversity of other needs have all contributed to a substantial total. A considerable aggregate tonnage has been going into trucks and other heavy types of automotive equipment.

Platemakers generally haven't

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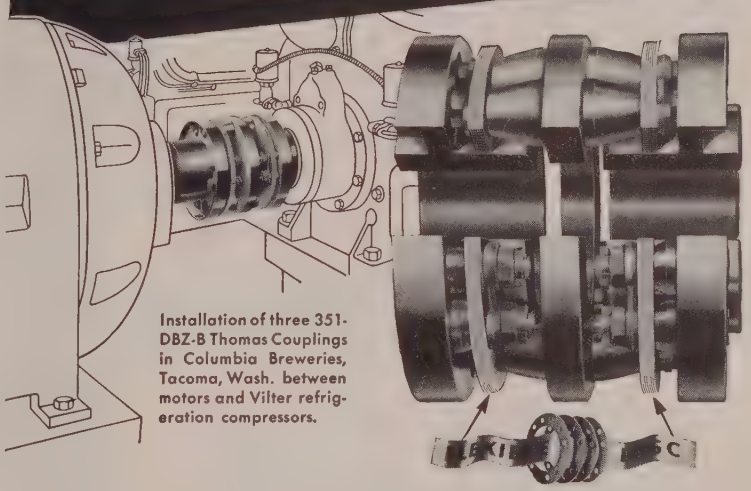
for more years of better service!

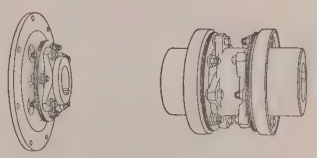


Installation of three 351-DBZ-B Thomas Couplings in Columbia Breweries, Tacoma, Wash. between motors and Vilter refrigeration compressors.

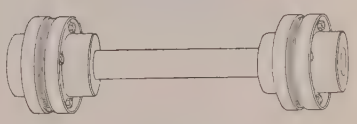
Patented Flexible Disc Rings of special steel transmit the power and provide for parallel and angular misalignment as well as free end float.

DISTINCTIVE ADVANTAGES

FACTS	EXPLANATION
NO MAINTENANCE	Requires No Attention. Visual Inspection While Operating.
NO LUBRICATION	No Wearing Parts. Freedom from Shut-downs.
NO BACKLASH	No Loose Parts. All Parts Solidly Bolted.
CAN NOT "CREATE" THRUST	Free End Float under Load and Misalignment. No Rubbing Action to cause Axial Movement.
PERMANENT TORSIONAL CHARACTERISTICS	Drives Like a Solid Coupling. Elastic Constant Does Not Change. Original Balance is Maintained.



THOMAS COUPLINGS ARE MADE FOR A WIDE RANGE OF SPEEDS, HORSEPOWER AND SHAFT SIZES.



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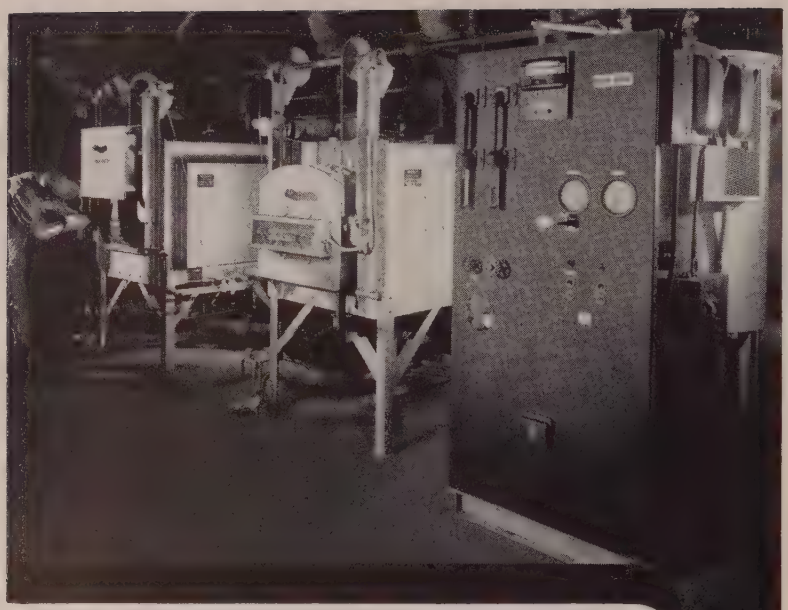

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Allis-Chalmers of Milwaukee is using Hevi Duty Controlled Atmosphere Furnaces to heat treat tools and dies made from high carbon, high chrome steels, 18-4-1, molybdenum, and cobalt high speed steels. Maintaining the exact surface carbon content of the tools and dies during heat treating is achieved with —

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- A Hevi Duty Box Type Hardening Furnace, designed for temperatures to 2000° F., is used for preheating high speed steels and hardening carbon steels.
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This combination assures you that tools and dies can be treated to exact hardness. Achieve better heat treating results by specifying Hevi Duty Furnaces. Write for Bulletin 153.

HEVI DUTY ELECTRIC COMPANY
MILWAUKEE 1, WISCONSIN
Heat Treating Furnaces... Electric Exclusively
Dry Type Transformers Constant Current Regulators

opened fourth-quarter books officially, although they are virtually out of the market for the third quarter and are receiving an increasing amount of inquiry for the closing quarter of the year. Two producers expect to be in position shortly to book tonnage for delivery beyond September.

A specification extra on firebox plates over 6 to 8 in. inclusive, has been added to U. S. Steel Corp.'s schedule. The revised list became effective June 22.

Structural Shapes . . .

Structural Shape Prices, Page 106

Inquiry for structurals continues to pile up in the New York market. State work is out for bidding, and a diversity of other projects is being newly figured. District fabricators, generally, are booked well ahead, some as far as seven months. Upon occasion, however, shops can work into their schedules a particularly attractive job for earlier handling.

Although awards are light and inquiry is spotty in the Philadelphia area, considerable work is reported in the active stage.

At Midwest points, such as Cleveland and Chicago, a large volume of public construction, including highway projects, is providing the structural market with a strong prop. On the West Coast, however, building projects appear to have fallen under earlier expectations. Los Angeles fabricators, nevertheless, report orders are coming in faster than they have in two years.

Generally, fabricators are more concerned over steel supplies than they are with new contracts. They are meeting increasing difficulty maintaining balanced inventories, especially wide flange beams.

That tight supply situation reflects the trend of one-story manufacturing and commercial structures which use this type structural. Some relief is expected later when an eastern mill brings in new capacity.

U. S. Steel Corp. is installing new soaking pits, a beam shear with associated transfer tables and a 9-roll straightener for beams at its Homestead Works, Munhall, Pa.

Rails, Cars . . .

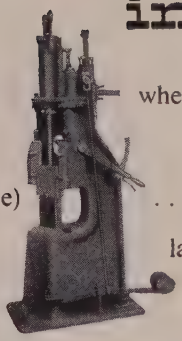
Track Material Prices, Page 109

Not only is there improvement in railroad car demand, but pressure for fast equipment deliveries is mounting. Railroads are running into difficulty in getting desired deliveries because of the shortage of steel.

The New York Central Railroad,

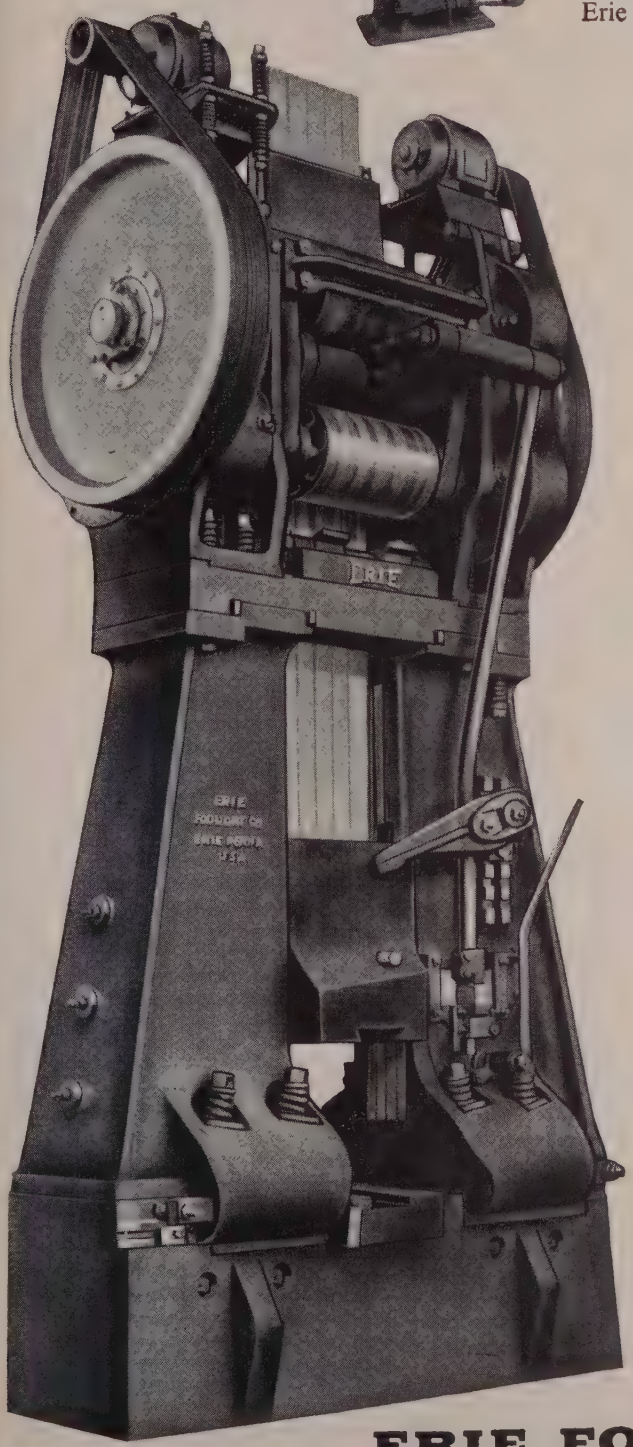
(*Please turn to page* 120)

in the good old days



(such as this 100 lb. single frame)

when Erie Foundry was *the first* to use all-steel construction in all our hammers . . . . . and when hammermen thought a board drop hammer larger than 5,000 lbs. was a wild dream . . . . even then Erie Foundry was a great name in forging hammers



today

Erie Foundry has recently built the world's largest board drop hammer. This 10,000 lb. hammer is at work for Eaton Manufacturing Co's Marion, Ohio forge plant. Eaton is forging 68 lb. net, Flat Back Ring Gears, 16" in diameter, in a single impression die, straight down without blocking or pancaking.

In addition to forging large gears speedily, Eaton likes the Erie 10,000 lb. Board Drop Hammer because the 4-roll lifting head gives longer board life. Air operated board clamps ease the hammerman's job.

As in the good old days, this 10,000 lb. board drop hammer is all-steel . . . and made by Erie.

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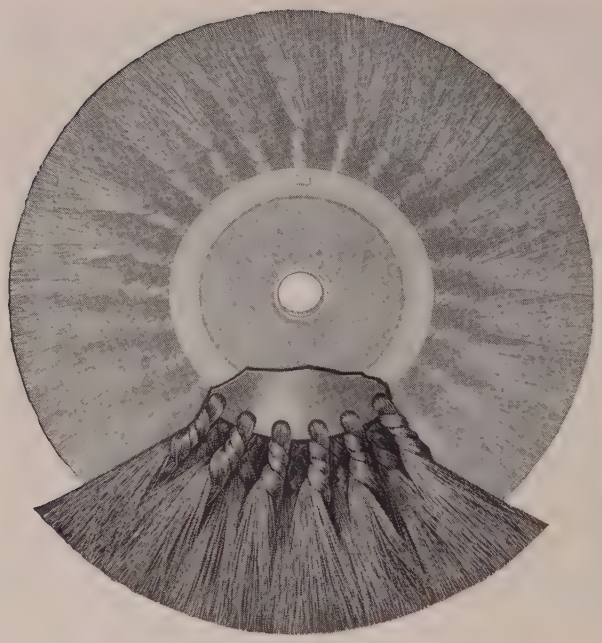
ERIE FOUNDRY CO. ERIE, PA.



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- *Longer equipment life*

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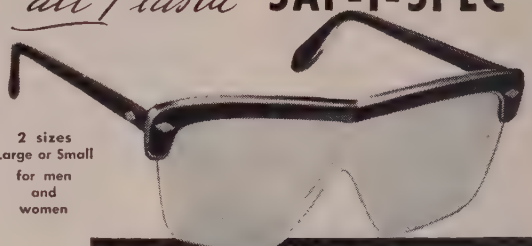

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MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si), Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.
(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.). Base price per net ton $190, Clairton, Duquesne, Johnstown and Sheridan, Pa.; Alloy, W. Va.; Ashtabula, Marietta, Philo, O.; Sheffield, Ala.; Portland, Oreg., and Tacoma, Wash. Add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.

(Mn 79-81%) Lump $198 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 76%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max, 0.07% C, 29.95c per lb of contained Mn, carload packed 30.7c, ton lots 31.8c, less ton 33c. Delivered. Deduct 1.5c for max 0.15% C grade from above prices, 3c for max, 0.30% C, 3.5c for max 0.50% C, and 6.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P. 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese Metal: 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 45c per lb of metal; packed, 45.75c; ton lot 47.25c; less ton lots 49.25c. Delivered. Spot, add 2c.

Electrolytic Manganese Metal: Min carloads, 30c; 2000 lb to min carloads, 32c; 250 lb to 1999 lb 34c. Premium for hydrogen-removed metal, 0.75c per lb. Prices are f.o.b. cars, Knoxville, Tenn., freight allowed to St. Louis or to any point east of Mississippi; or f.o.b. Marietta, O., freight allowed.

Silicomanganese: (Mn 65-85%). Contract, lump, bulk 1.50% C grade, 18-20% Si, 11.00c per lb of alloy, carload packed 11.75c, ton lots 12.65c, less ton 13.65c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.4c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot, add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%.) Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l. packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, C 0.025% max. (Simplex 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High-Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. 8 M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low-Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, 8 M x D, 18.35c per lb of alloy, ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 24.75c per lb of contained chromium plus 12c per pound of contained silicon; 1" x down, bulk 24.90c per pound of contained chromium plus 12.2c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Chromium Metal: (Min 97% Cr and 1% Fe). Contract, 1" x D; packed, max 0.50%, carload $1.16, ton lots $1.18; less ton $1.20. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 9c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 50-55%, Si 2-3.5% max, C 0.5-1% max) $3.10. **Primos and High Speed Grades** (V 50-55%, Si 1.50% max, C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12c per lb of contained Si, carload packed 13.6c, ton lot 15.5c, less ton 16.7c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max). Add 1.7c to 50% ferrosilicon prices.

65% Ferrosilicon: Contract, carload, lump, bulk, 13.5c per pound contained silicon; carload packed 14.85c; ton lots, 16.05c; less ton, 17.4c, delivered. Spot, add 0.35c.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.4c per lb of contained Si, carload packed 15.7c, ton lot 16.85c, less ton 18.1c. Delivered. Spot, add 0.3c.

90% Ferrosilicon: Contract, carload, lump, bulk, 17.25c per lb of contained Si, carload packed 18.45c, ton lot 19.4c, less ton 20.45c. Delivered. Spot, add 0.25c.

Silicon Metal: (Mn 97% Si and 1% max Fe). C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer. (Approx. 20% Al, 40% Si, 40% Fe). Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.25c per lb of alloy, ton lots packed 10.15c, 200 to 1999 lb 10.50c, smaller lots 11c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 25.25c per lb of alloy, ton lot 26c, less ton 27.25c. Freight allowed. Spot, add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 85c per pound; Grade B (14-18% B) $1.20; Grade C (19% min M) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si). $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5%-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%). Contract, lump, carloads 9.50c per lb f.o.b. Suspension Bridge, N. Y., freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighting approx. 3⅝ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.05c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb on Mn). Contract, carload, bulk 11.85c per lb of briquet, c.l. packaged 12.85c, ton lot 13.65c, less ton 14.55c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.45c per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.55c per lb of briquet. Packed c.l. 7.55c, ton lot 8.35c, less ton 9.25c. Delivered, Spot, add 0.25c.
(Small size—Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 6.7c. Packaged c.l. 7.7c, ton lot 8.5c, less ton 9.4c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 5000 lb W or more $3.80 per lb of contained W; 2000 lb W to 5000 lb W, $3.90; less than 2000 lb W, $4.02, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $6.90 per lb of contained Cb, less ton $6.95. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb plus Ta 60% min, C 0.30% max) ton lots, 2" x D, $4.65 per lb of contained Cb plus Ta, deld.; less ton lots $4.70.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carloads packed 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5.7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy, ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 16.6c per lb of alloy; ton lots 18.10c; less ton lots 19.35c, f.ob. Niagara Falls; freight allowed to St. Louis.

Siminal: (Approx. 20% each Si, Mn, Al; bal. Fe). Lump, carload, bulk 15.50c. Packed c.l. 16.50c, 2000 lb to c.l. 16.75c, less than 2000 lb 17.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $4 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Sigio, Tenn., $90 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, in 200-lb containers, f.o.b. Langeloth, Pa., $1.46 in all sizes except powdered which is $1.57; Washington, Pa., furnace, any quantity, $1.46.

Technical Molybdic-Oxide: Per lb contained Mo, f.o.b. Langeloth, Pa., $1.25 in cans; in bags, $1.24, f.o.b. Langeloth, Pa.; Washington, Pa., $1.24.

(*Concluded from page* 116)

for instance, is inquiring for 3000 boxcars and is anxious to place orders with shipments to begin in the fourth quarter. This means considerable steel would have to be rolled in August, and that appears to be out of the question with the mills already heavily booked up for the period.

Just how this will affect ultimate buying against some of the larger railroad equipment programs under contemplation is uncertain. It is believed that the carriers eventually will go through with their purchases.

The Southern Railroad has closed on 750 hoppers to ACF Industries, New York, and 750 to the Pullman-Standard Car Mfg. Co., Chicago. The St. Louis-San Francisco is entering the market for 2000 boxcars, of which 250 may be placed with its own shops. It also is inquiring for 200 seventy-ton gondolas. The Erie has authorized the purchase of one-thousand 50-ft 6-in. box cars.

Pig Iron . . .

Pig Iron Prices, Page 111

It is difficult to gage pig iron demand with its relation to melting requirements. Buying in June proved stronger than anticipated, but the degree to which an expected price advance is spurring demand can't be determined.

Movement of merchant iron this week will reach a low ebb because of mass vacations at a number of foundries. Many other foundries will be down for vacations later in the summer.

Ferroalloys . . .

Ferroalloy Prices, Page 119

Reductions of $5.10 and $1.60 respectively in prices for ferrocolumbium and ferrotantalum-columbium were made effective July 1 by Electro Metallurgical Co. division of Union Carbide & Carbon Corp., New York. The new base price for ferrocolumbium is $6.90 a pound of contained columbium; for ferrotantalum-columbium $4.65 per pound of contained columbium, plus tantalum.

Recent completion of the government stockpiling program for columbium-tantalum ores and withdrawal of the 100 per cent bonus which had applied to the ore to stimulate production, have resulted in substantially lower ore cost and make possible the reduction in columbium alloy prices.

Domestic mine shipments of manganese ore in March, totaling 23,200 tons, were off 20 per cent from shipments in February.

Imports of ore containing 35 per cent or more manganese totaled 111,839 tons in the month, a decrease of 25 per cent from February.

Production of manganese alloys (ferromanganese, silicomanganese, and manganese metal) increased 22 per cent in the month to 82,671 short tons.

Iron Ore . . .

Iron Ore Prices, Page 121

Shipments of Lake Superior iron ore in the week ended June 27 totaled 2,963,850 gross tons, reports the Lake Superior Iron Ore Association. This was the second largest weekly tonnage moved to date this year. The season's movement to June 27 was reported at 26,366,488 tons, nearly 6 million tons more than the figure up to June 27 in the 1954 navigation season.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 121

Foundry coke demand holds fairly steady and isn't feeling the speculative play characterizing pig iron currently. For one thing, coke is bulky and discourages inventory build-up.

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Ores

Lake Superior Iron Ore

(Prices effective for the 1955 shipping season, gross ton, 51.50% iron natural, rail of vessel, lower lake ports)

Old range bessemer	$10.40
Old range nonbessemer	10.25
Mesabi bessemer	10.25
Mesabi nonbessemer	10.10
Open-hearth lump	11.25
High phosphorus	10.00

Eastern Local Iron Ore

Cents per unit, deld. E. Pa.

Foundry and basic 52-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60-68%	20.00
N. African hematite (spot)	nom. 18.00-20.00
Brazilian iron ore, 68-69% (spot)	24.00-26.00

Tungsten Ore

Net ton unit, before duty

Foreign, wolframite, good commercial quality	*$31.50-$32.00*
Domestic, scheelite, mine	63.00

Manganese Ore

Mn 48%, nearby, 85c-87c per long ton unit, c.i.f. U. S. ports, duty for buyer's account; 46-47%, 75c-80c.

Chrome Ore

Gross ton, f.o.b. cars New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., Tacoma, Wash.

Indian and African	
48% 2.8:1	nom. $40.00-$52.00
48% 3:1	42.00-44.00
48% no ratio	32.00-34.00
South African Transvaal	
44% no ratio	$19.00-$20.00
48% no ratio	31.00-32.00
Domestic	
Rail nearest seller	
18% 3:1	$39.00

Molybdenum

Sulphide concentrate, per lb of Mo content, mines, unpacked	$1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard

56-60%	*$3.50-$3.80*
60-65%	*3.80-4.25*

Vanadium Ore

Cents per lb V_2O_5 content, deld. mills

Domestic	31.00

Refractories

Fire Clay Brick (per 1000)

High-Heat Duty: Pueblo, Colo., $94; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., $114; Salina, Pa., $119; Niles, O., $125; Los Angeles, Pittsburg, Calif., $137.20.

Silica Brick (per 1000)

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $120; Warren, Niles, O., Hays, Pa., $125; Morrisville, Pa., $123.50; E. Chicago, Ind., Joliet, Rockdale, Ill., $130; Cutler, Utah, $121.55; Los Angeles, $127.85.

Super Duty: Hays, Sproul, Pa., Warren, Windham, O., Athens, Tex., $137; Morrisville, Pa., Niles, O., $140; Joliet, Ill., $143.

Semisilica Brick (per 1000)

Clearfield, Pa. $130; Philadelphia, $116; Woodbridge, N. J., $114.

Insulating Fire Brick (per 1000)

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala., $212.80.

Ladle Brick (per 1000)

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Mexico, Mo., $77.50; Wellsville, O., $81.50; Clearfield, Pa., Portsmouth, O., $87; Perla, Ark., $109; Los Angeles $110.25; Pittsburg, Calif., $111.30.

High-Alumina Brick (per 1000)

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $181; Danville, Ill., $169.30.

60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., Clearfield, Pa., $225; Danville, Ill., $213.20.

70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $260; Danville. Ill., $258; Clearfield, Pa., $267.

Sleeves (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $147; Clearfield, Pa., $148.50; St. Louis, $159.30; Athens, Tex., $155.

Nozzles (per 1000)

Reesdale, Pa., $234.70; Johnstown, Pa., $240.70; Clearfield, Pa., $241.40; St. Louis, $259.45; Athens, Tex., $247.70; Bridgeburg, Pa., $267.50.

Runners (per 1000)

Reesdale, Johnstown, Bridgeburg, Pa., $183.50; Clearfield, Pa., $185.50; St. Louis, $195.80; Athens, Tex., $191.80.

Dolomite (per net ton)

Domestic, dead-burned, bulk, Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Narlo, Gibsonburg, Woodville, O., $14.50; Thornton, McCook, Ill., $15.10; Dolly Siding, Bonne Terre, Mo., $13.65.

Magnesite (per net ton)

Domestic, dead-burned, bulk, ¾-in. grains with fines: Luning, Nev., Chewelah, Wash., $38.

Metallurgical Coke

Price per net ton

Beehive Ovens

Connellsville, furnace	$13.50-$14.00
Connellsville, foundry	16.50-17.00

Oven Foundry Coke

Kearny, N. J., ovens	$24.50
Camden, N. J., ovens	24.00
Everett, Mass., ovens	
New England, deld.	*26.05
Chicago, ovens	24.50
Chicago, deld.	26.00
Terre Haute, Ind., ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Cincinnati, deld.	25.85
Painesville, O., ovens	25.50
Cleveland, deld.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Buffalo, ovens	25.00
Buffalo, deld.	26.25
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	24.00
Swedeland, Pa., ovens	24.00
St. Louis, ovens	
St. Louis, deld.	26.00
St. Paul, ovens	24.25
Portsmouth, O., ovens	24.00
Cincinnati, O., deld.	26.62
Detroit, ovens	25.50
Detroit, deld.	26.50
Pontiac, deld.	27.06
Saginaw, deld.	28.58

*Or within $4.55 freight zone from works.

Coal Chemicals

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	32.00-35.00
Industrial xylol	32.00-35.00
Per ton, bulk, ovens	
Sulphate of ammonia	$42-$45
Birmingham area	42.00†

†With port equalization against imports.

Cents per pound, producing point

Phenol, 40 deg. (U.S.P.), tank cars	18.00
c.l. drums	19.00
l.c.l. drums	19.50

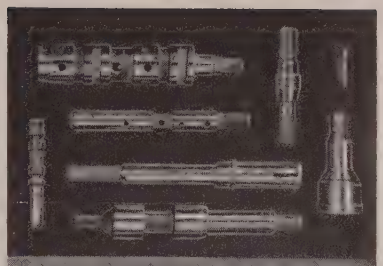
Fluorspar

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $35-$36; 70%, $32-$33; 60%, $28-$29. Imported, net tons, duty paid, metallurgical grade: European, $28-$30; Mexican, $25.50.

Electrodes

Threaded with nipple, unboxed, f.o.b. plant

Inches Diam	Length	Per 100 lb
GRAPHITE		
2	24	$47.75
2½	30	30.75
3	40	30.00
4	40	28.50
5⅛	40	28.25
6	60	25.50
7	60	25.25
8, 9, 10	60	22.75
12	72	26.00
14	60	22.50
16	72	21.50
17	60	22.00
18	72	21.50
20	72	21.25
CARBON		
8	60	11.40
14, 12, 10	60	11.10
14	72	10.25
17	60	10.25
17	72	9.85
20	84	9.85
20	90	9.65
24	72, 84	9.85
24	96	9.60
30	84	9.75
40,35	110	9.50
40	100	9.50



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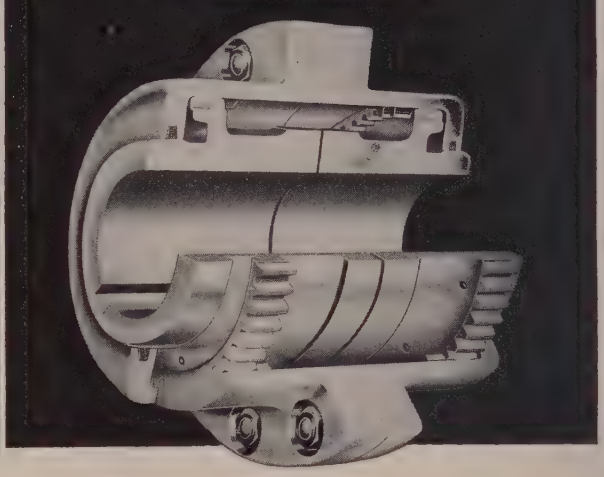

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Scrap . . .

Scrap Prices, Page 124

Philadelphia—Steel scrap prices advanced again, with a greater number of grades affected. Strength is due mainly to high consumption at the mills, combined with a continued lag in incoming shipments at dealers' yards. Collections have been so slow that some dealers have closed down for a week to two weeks for mass vacations.

In addition to some recent mill purchases of prime grades of open hearth scrap at $39, delivered, the Fairless, Pa., consumer is negotiating for additional tonnage. Meanwhile, sellers are having to pay more in covering on some of this consumer's purchase last month. Also, while the pressure for steel scrap for export is easing, brokers are having difficulty supplying tonnage against commitments.

Chicago—Purchases of scrap by two leading mills here have lifted prices on steelmaking grades of scrap $1 a ton. This puts No. 1 industrial heavy melting at $36 and No. 1 dealer at $34, with No. 1 factory bundles at $37. Turnings and borings are up $2 on purchases just outside the immediate Chicago consuming area.

Cleveland—Despite the uncertainties arising from the steel labor negotiations, the scrap market here and in the Valley is displaying a decidedly strong tone with dealer prices up $2 to $3 per ton. Production scrap is reportedly quoted $2 higher. The strength reflects sales both here and in the Valley. At the latter point No. 1 steel sold at $38, purchases being made by two of the leading mills.

Buffalo — Increased quantities of scrap are moving out of the area as local prices fail to keep pace with those quoted in other districts. Mills report large yard stocks and fresh inquiries are restricted. Shipments from the area to Canada and the Valley are noted.

New York—Scrap brokers have advanced buying prices sharply on several major grades. Heavy consumption here buttressed by continued demand from abroad is the underlying factor for strength. Brokers are offering $34-$35 for No. 1 heavy melting and No. 1 bundles; $30-$31 for No. 2 heavy melting; and $23-$24 for No. 2 bundles.

They also have advanced offerings for machine shop turnings to $15-$16; for mixed borings and short turnings to $16-$17. They are buying low phos structural and plate at $36-$37. In the cast grades they are paying higher for breakable cast at $34-$35.

In stainless steel scrap brokers' buying prices are up $5 on 18-8 borings and turnings which are holding at $110-$115. Other stainless grades are unchanged.

Boston — Steel scrap prices are higher on heavier grades with new buying by eastern Pennsylvania and district consumers. Included are No. 2 bundles, which are in better supply with most yards. Buying for export has slumped.

Pittsburgh—Heavy melting grades of scrap are quoted at $1 a ton higher on the basis of brokers' buying prices. It is difficult to buy good No. 1 heavy melting scrap at $35, and $36 is being paid. There are free predictions that a higher price will be paid by mills if they re-enter the market in volume now.

Birmingham — Prices are unchanged, but the scrap market here looks a little stronger because of higher prices in the North.

Youngstown—Republic Steel Corp. and Youngstown Sheet & Tube Co. are reported to have made small purchases of No. 1 heavy melting steel at $38 a ton, $3 above the recognized market of $35 here. The sales served to strengthen the market at Cleveland. Purchases of some No. 2 heavy melting at about $32 and No. 2 bundles at $26 are reported to have been made here by U. S. Steel Corp. Also, Copperweld Steel Co., Warren, O., bought a tonnage of No. 1 heavy melting. Local mills, for the most part, have been buying scrap direct from manufacturing plants and have been using a larger proportion of hot metal in their furnace charges.

Cincinnati—A stronger tone prevails in the local scrap market. Quotations on No. 2 heavy melting are up $1 a ton to $27-$28, while No. 2

(*Please turn to page* 126)

"BEST $1286 WE EVER SPENT!"

That's the price of this 5-Ton HANNIFIN Press*

A lot of production men have made such comments about this versatile little hydraulic press.

They like the way you can adjust it to the exact force you need for each job, all the way from 1 ton to 5 tons. The backstroke is adjustable, too, so the ram just clears the work on any job. Fast-acting controls. Prompt delivery from stock.

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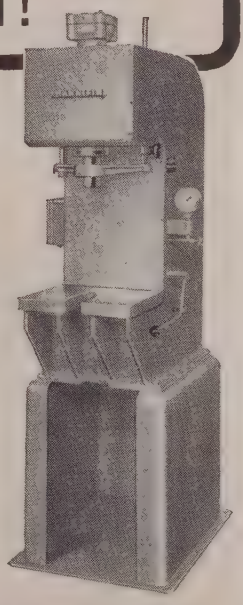

HANNIFIN

Hannifin Corporation, 523 S. Wolf Road, Des Plaines, Illinois

Iron and Steel Scrap

Consumer prices, per gross ton, except as otherwise noted, including broker's commission, as reported to STEEL. *Changes shown in italics.*

STEELMAKING SCRAP COMPOSITE

June 29	$36.50
June 22	35.25
May Avg.	34.87
June 1954	27.92
June 1950	39.25

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer's plant)

No. 1 heavy melting	*35.00-36.00*
No. 2 heavy melting	*32.00-33.00*
No. 1 bundles	*35.00-36.00*
No. 2 bundles	*27.00-28.00*
No. 1 busheling	*35.00-36.00*
Machine shop turnings	20.50-21.50
Mixed borings, turnings	20.50-21.50
Short shovel turnings	25.00-26.00
Cast iron borings	25.00-26.00
Cut structurals, 5 ft lengths	37.00-38.00
Heavy turnings	*33.00-34.00*
Punchings & plate scrap	*39.00-40.00*
Electric furnace bundles	*39.00-40.00*

Cast Iron Grades

No. 1 cupola	39.00-40.00
Charging box cast	34.00-35.00
Heavy breakable cast	34.00-35.00
Unstripped motor blocks	25.00-26.00
No. 1 machinery cast	43.00-44.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00
Rails, 2 ft and under.	49.00-50.00
Rails, 18 in. and under.	50.00-51.00
Rails, random lengths.	45.00-46.00
Railroad specialties	43.00-44.00

Stainless Steel Scrap

18-8 bundles & solids	225.00-240.00
18-8 turnings	110.00-115.00
430 bundles & solids	100.00-105.00
430 turnings	60.00-65.00

CLEVELAND

(Delivered consumers's plant)

No. 1 heavy melting	*34.50-35.50*
No. 2 heavy melting	*28.50-29.50*
No. 1 bundles	*34.50-35.50*
No. 2 bundles	24.00-25.00
No. 1 busheling	*34.50-35.50*
Machine shop turnings	*19.00-20.00*
Mixed borings, turnings	*24.00-25.00*
Short shovel turnings	*24.00-25.00*
Cast iron borings	*24.00-25.00*
Low phos.	*34.00-35.00*
Cut structural plates 2 ft and under	*42.00-43.00*
Alloy free, short shovel turnings	*28.50-29.50*
Electric furnace bundles	*35.50-36.50*

Cast Iron Grades

No. 1 cupola	*44.00-45.00*
Charging box cast	*38.00-39.00*
Stove plate	*44.00-45.00*
Heavy breakable cast	*34.00-35.00*
Unstripped motor blocks	*26.00-27.00*
Brake shoes	33.00-34.00
Clean auto cast	*45.00-46.00*
Burnt cast	*34.00-35.00*
Drop broken machinery	*45.00-46.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*37.00-38.00*
R.R. malleable	*46.00-47.00*
Rails, 2 ft and under	*50.00-51.00*
Rails, 18 in. and under	*51.00-52.00*
Rails, random lengths	*45.00-46.00*
Cast steel	*40.00-41.00*
Railroad specialties	*41.00-42.00*
Uncut tires	*44.00-45.00*
Angles, splice bars	*46.00-47.00*
Rails, rerolling	*55.00-56.00*

Stainless Steel

(Brokers' buying pricese; f.o.b. shipping point)

18-8 bundles, solids	*240.00-250.00*
18-8 turnings	*110.00-120.00*
430 clips, bundles, solids	90.00-100.00
430 turnings	40.00-50.00

YOUNGSTOWN

(Delivered consumer's plant)

No. 1 heavy melting	*37.00-38.00*
No. 2 heavy melting	*32.00-33.00*
No. 1 bundles	*37.00-38.00*
No. 2 bundles	*26.00-27.00*
No. 1 busheling	*37.00-38.00*
Machine shop turnings	*20.50-21.50*
Short shovel turnings	*26.00-27.00*
Cast iron borings	*26.00-27.00*
Low phos.	*38.00-39.00*
Electric furnace bundles	*38.00-39.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*37.00-38.00*

CHICAGO

No. 1 heavy melting	*34.00-36.00*
No. 2 heavy melting	*29.00-30.00*
No. 1 factory bundles	*36.00-37.00*
No. 1 dealer bundles	33.00-34.00
No. 2 bundles	*24.00-25.00*
No. 1 busheling	*34.00-36.00*
Machine shop turnings	*19.00-20.00*
Mixed borings, turnings	*21.00-22.00*
Short shovel turnings	*21.00-22.00*
Cast iron borings	*21.00-22.00*
Cut structurals, 3 ft	*37.00-38.00*
Punchings & plate scrap	*38.00-39.00*
Electric furnace bundles	*36.00-37.00*

Cast Iron Grades

No. 1 cupola	*42.00-43.00*
Stove plate	33.00-34.00
Unstripped motor blocks	29.00-30.00
Clean auto cast	*46.00-47.00*
Drop broken machinery	*46.00-47.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*37.00-38.00*
R.R. malleable	45.00-46.00
Rails, 2 ft and under	*50.00-51.00*
Rails, 18 in. and under	*51.00-52.00*
Angles, splice bars	*44.00-45.00*
Rails, rerolling	*52.00-53.00*

Stainless Steel Scrap

18-8 bundles & solids	*260.00-265.00*
18-8 turnings	*135.00-140.00*
430 bundles & solids	100.00-105.00
430 turnings	45.00-50.00

Chicago Mercantile Exchange

(Week ended June 29)

No. 1 Heavy Melting

	High	Low	Close
Oct.	....	....	36.00*
Jan.	....	....	....

Sales (160-ton units): None.
*Nominal

DETROIT

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	27.50
No. 2 heavy melting	21.00
No. 1 bundles	27.50
No. 2 bundles	19.00
No. 1 busheling	27.50
Machine shop turnings	13.00
Mixed borings, turnings	13.00
Short shovel turnings	16.50
Punchings & plate scrap	33.00

Cast Iron Grades

Charging box cast	28.00
No. 1 cupola	37.00
Stove plate	32.00
Heavy breakable	28.00
Unstripped motor blocks	20.00
Clean auto cast	42.00
Malleable	35.00

BIRMINGHAM

No. 1 heavy melting	32.00-33.00
No. 2 heavy melting	28.00-29.00
No. 1 bundles	31.00-32.00
No. 2 bundles	23.00-24.00
No. 1 busheling	32.00-33.00
Cast iron borings	15.00-16.00
Short shovel turnings	24.00-25.00
Machine shop turnings	18.00-19.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	45.00-46.00
Stove plate	42.00-43.00
Bar crops and plate	36.00-37.00
Structural plate, 2 ft	36.00-37.00
Unstripped motor blocks	35.50-36.50

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00
Rails, 2 ft and under	44.00-45.00
Rails, 18 in. and under	45.00-46.00
Rails, rerolling	43.00-44.00
Rails, random lengths	40.00-41.00
Angles, splice bars	43.00-44.00
Std. steel axles	35.00-36.00

PHILADELPHIA

(Delivered consumer's plant)

No. 1 heavy melting	*39.00*
No. 2 heavy melting	*34.00*
No. 1 bundles	*39.00*
No. 2 bundles	*30.00**
No. 1 busheling	*39.00*
Electric furnace bundles	*40.00**
Machine shop turnings	*22.00-23.00*
Mixed borings, turnings	*23.00*
Short shovel turnings	*25.00-26.00**
Structurals & plate	*41.00-42.00*
Heavy turnings	33.50-34.00
Couplers, springs wheels	*41.00-41.50*
Rail crops, 2 ft & under	50.00-51.00

Cast Iron Grades

No. 1 cupola	36.00
Malleable	45.00
Heavy breakable cast	*42.00*
Drop broken machinery	*45.00*

*Nominal.

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	*34.00-35.00*
No. 2 heavy melting	*30.00-31.00*
No. 1 bundles	*34.00-35.00*
No. 2 bundles	*23.00-24.00*
Machine shop turnings	*15.00-16.00*
Mixed borings, short turnings	*16.00-17.00*
Short shovel turnings	17.00-18.00
Low phos. (structural & plate)	*36.00-37.00*

Cast Iron Grades

No. 1 cupola	31.00-32.00
Unstripped motor blocks	21.00-22.00
Heavy breakable	*34.00-35.00*

Stainless Steel

18-8 sheets, clips, solids	235.00-240.00
18-8 borings, turnings	*110.00-115.00*
430 sheets, clips, solids	95.00-100.00
410 sheets, clips, solids	75.00-80.00

BOSTON

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	*28.00-29.00*
No. 2 heavy melting	*22.00-22.50*
No. 1 bundles	*28.00-29.00*
No. 2 bundles	*20.00-21.00*
Machine shop turnings	12.00-12.50
Mixed borings, turnings	15.00-15.50
Short shovel turnings	16.00-16.50
No. 1 cast	31.00-32.00
Mixed cupola cast	29.00-30.00
No. 1 machinery cast	34.00-36.00

BUFFALO

No. 1 heavy melting	29.00-30.00
No. 2 heavy melting	25.00-26.00
No. 1 bundles	29.00-30.00
No. 2 bundles	23.00-24.00
No. 1 busheling	29.00-30.00
Mixed borings, turnings	20.50-21.50
Machine shop turnings	19.00-20.00
Short shovel turnings	21.50-22.50
Cast iron borings	20.50-21.50
Low phos.	32.00-33.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	36.00-37.00
No. 1 machinery	41.00-42.00

Railroad Scrap

Rails, random lengths	35.00-36.00
Rails, 3 ft and under	42.00-43.00
Railroad specialties	36.50-37.50

CINCINNATI

(Brokers' buying prices; f.o.b. shipping point)

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	*27.00-28.00*
No. 1 bundles	31.00-32.00
No. 2 bundles	*23.00-24.00*
No. 1 busheling	31.00-32.00
Machine shop turnings	17.50-18.50
Mixed borings, turnings	17.50-18.50
Short shovel turnings	21.00-22.00
Cast iron borings	17.50-18.50
Low phos., 18 in.	37.00-38.00

Cast Iron Grades

No. 1 cupola	39.00-40.00
Heavy breakable cast	35.00
Charging box cast	36.00
Drop broken machinery	45.00-46.00

Railroad Scrap

No. 1 R.R. heavy melt.	*33.00-34.00*
Rails, 18 in. and under	47.00-48.00
Rails, random lengths	40.00-41.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	30.00
No. 2 heavy melting	28.00
No. 1 bundles	30.00
No. 2 bundles	23.50
Machine shop turnings	15.00
Short shovel turnings	17.00

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	35.00
Heavy breakable cast	33.00
Unstripped motor blocks	33.00
Brake shoes	32.00
Clean auto cast	43.00
Stove plate	33.50

Railroad Scrap

No. 1 R.R. heavy melt.	34.50
Rails, 18 in. and under	46.00
Rails, random lengths	40.00
Rails, rerolling	51.00
Angles, splice bars	41.00

SEATTLE

(Delivered consumer's plant)

No. 1 heavy melting	33.00
No. 2 heavy melting	29.00
No. 1 bundles	25.00
No. 2 bundles	23.00
No. 8 bundles	16.00-17.00
Machine shop turnings	15.00-16.00
Mixed borings, turnings	15.00-16.00
Short shovel turnings	15.00-16.00
Electric furnace, No. 1	39.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	36.00-40.00
Heavy breakable cast	28.00
Unstripped motor blocks	30.00-32.00
No. 1 wheels	24.00-25.00
Stove plate (f.o.b. plant)	28.00-29.00
Brake shoes	28.00-29.00

Railroad Scrap

(Delivered consumer's plant)

Rails, random lengths	34.00

LOS ANGELES

No. 1 heavy melting	30.00
No. 2 heavy melting	28.00
No. 1 bundles	29.00
No. 2 bundles	23.00
Machine shop turnings	8.00

Cast Iron Grades (F.o.b. shipping point)

No. 1 cupola	42.00-44.00

SAN FRANCISCO

No. 1 heavy melting	36.00
No. 2 heavy melting	28.00
No. 1 bundles	29.00
No. 2 bundles	25.00
No. 1 busheling	30.00
Machine shop turnings	10.00-11.00
Mixed borings, turnings	10.00-11.00
Short shovel turnings	12.00
Cast iron borings	12.00
Cut structurals	30.00
Heavy turnings	11.00
Punchings & plate scrap	30.00

Cast Iron Grades

No. 1 cupola	40.00-43.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	30.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	48.00

HAMILTON, ONT.

(Delivered prices)

No. 1 heavy melting	34.00
No. 2 heavy melting	31.00
No. 1 bundles	34.00
No. 2 bundles	28.00
Mixed steel scrap	28.00
Mixed borings, turnings	16.00
Rails, remelting	43.00
Busheling, new factory: Prepared	32.00
Unprepared	28.00
Short steel turnings	16.00

Cast Iron Grades†

No. 1 machinery cast	42.00-45.00

†F.o.b., shipping point.

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N. W. Geist, Rectifier Department Sales Manager, presents one of the new, sealed Ignitron rectifiers, now available in greatly extended ranges. It is the same type used in this metal-enclosed rectifier unit, rated at 1500 kw, 250 volts, for steel mill service.

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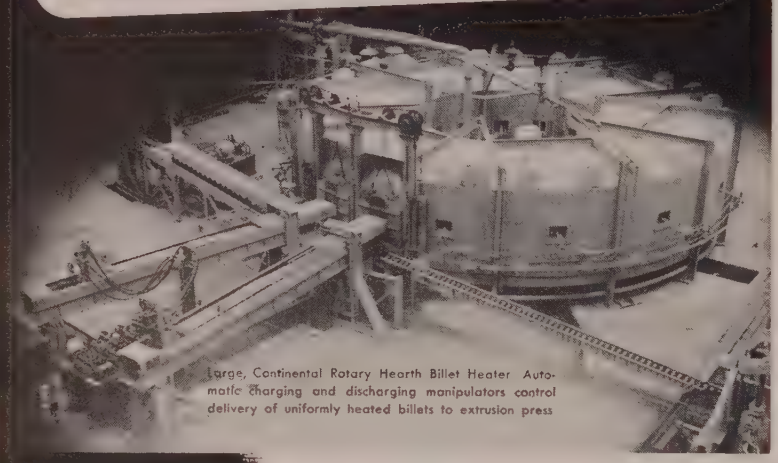

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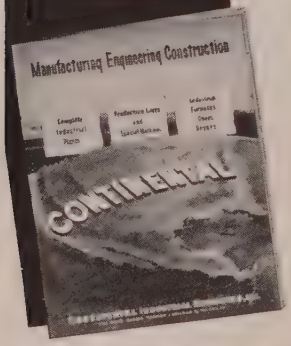

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MANUFACTURERS—ENGINEERS—CONTRACTORS FOR OVER A QUARTER OF A CENTURY

(*Concluded from page* 123)

bundles are $2 higher at $23-$24.

Detroit — Scrap prices held unchanged here last week. Brokers anticipate higher quotations on pending auto lists and these may be reflected in quoted prices next week.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

2215 tons, 13 bridges, Massachusetts turnpike, Hopkinton - Westboro - Southboro - Ashland-Framingham, Mass., to Harris Structural Steel Co., New York, through DeMatteo Construction Co., Quincy, Mass., general contractor.

5120 tons, 13 bridges, Massachusetts turnpike, Millbury-Auburn, Mass., to American Bridge Division, U. S. Steel Corp., Pittsburgh, through C. J. Langenfelder & Son Inc., Baltimore, general contractor.

1150 tons, woolen mill, Textron-American Inc., Barnwell, S. C., to Belmont Iron Works, Philadelphia; Daniel Construction Co., Greenville, S. C., general contractor; long span joists, 460 tons, Haven-Burch Co.; 240 tons, Ceco Steel Products Co., and 120 tons, Owens Steel Co.

300 tons, plant addition, Barrett Division, Allied Chemical & Dye Corp., Sunbury, Pa., to High-Welding Co., Lancaster, Pa.

200 tons, maintenance hangar, South Burlington, Vt., to American Bridge Division, U. S. Steel Corp., Pittsburgh.

195 tons, plant expansion, B. F. Goodrich Chemical Co., Louisville, to Vincennes Steel Co., Vincennes, Ind., (110 tons), balance to George L. Mesker Steel Co., Louisville.

140 tons, high school, Rockville, Md., to Barber & Ross Co., Washington; William E. Cramer, Washington, general contractor.

STRUCTURAL STEEL PENDING

5120 tons, 13 bridges and 5 box culverts, Massachusetts turnpike, Millbury-Auburn, Mass.; C. J. Langenfelder & Son Inc., Baltimore, low; also 2685 tons, reinforcing steel, and 16,100 linear feet of steel piling.

400 tons, shop depot, Letterkenny Ordnance Plant, Chambersburg, Pa.; Brotherton Construction Co., Harrisburg, Pa., low on general contract.

380 tons, Washington Water Power Co., service center, Spokane, Wash.; bids in.

350 tons, maintenance shop, Mt. Rainier Ordnance Depot, Washington state; general contract to Roy T. Earley Co., Tacoma, Wash., low at $767,000.

200 tons, naval hangar, Klamath Falls, Oreg.; Donald M. Drake Co., Portland, Oreg., low bidder at $628,521.

185 tons, state viaduct repairs, Union and Northumberland counties, Pa.; bids July 22.

160 tons, Washington state, truss bridge, Washkiakum county; general contract to Lockyear & White, Longview, Wash., low bidder at $105,458.

REINFORCING BARS . . .

REINFORCING BARS PLACED

900 tons, contract P-6, New Jersey approach work to Gloucester-Philadelphia Bridge, through Coffin Construction Co., to American Steel Engineering Co., Philadelphia.

510 tons, high school, Rockville, Md., to Bethlehem Steel Co., Bethlehem, Pa.; William E. Cramer, Washington, D. C., general contractor.

400 tons, building, Central State hospital, Nashville, Tenn., to McCarthy, Jones & Woodward, Nashville; Harmon Construction Co., Nashville, general contractor; 70 tons, fabricated steel, Nashville Steel Co.

200 tons, woolen mill, Textron-American Inc., Barnwell, S. C., to Owens Steel Co., Greenville, S. C.; Daniel Construction Co., Greenville, general contractor.

200 tons, hospital addition, Springfield, Vt., to Northern Steel Inc., Medford, Mass.; Columbia Construction Co., Boston, general contractor.

200 tons, branch, Ardmore, Pa., for Snellenberg Department Store, Philadelphia, to

(*Please turn to page* 128)

CLASSIFIED

Help Wanted

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TOP FLIGHT EXECUTIVE VICE PRESIDENT willing to make a substantial investment in an old established very profitable steel plate fabricating plant. Must be well qualified in all phases of the business. Good qualifications will put you in line for President within two years or sooner. Reply Box 250, STEEL, Penton Building, Cleveland 13, Ohio.

SALES ENGINEER
Metallurgical, mechanical, age 30-45, to sell refractories and insulation to steel plants. Sales experience not necessary, but must be familiar with open hearth and blast furnace operations. Middle West. Permanent position. Salary and expenses. All replies held in confidence. Send resume to Box 274, STEEL, Penton Building, Cleveland 13, Ohio.

TWO YOUNG ENGINEERS TO BE TRAINED IN A PRODUCTION PROGRAM. EXCELLENT FUTURE WITH DETROIT AREA STEEL MILL, ESTABLISHED FOR OVER TWENTY-FIVE YEARS. EXCELLENT SALARY PLUS OTHER EMPLOYEE BENEFITS. WRITE, GIVING FULL RESUME OF TECHNICAL BACKGROUND AND EXPERIENCE TO BOX 276, STEEL, PENTON BUILDING, CLEVELAND 13, OHIO.

Representatives Wanted

MIDWEST MACHINERY SALES REPRESENTATIVES
Heavy Machinery Manufacturer will offer exclusive representation contract to live sales organization now contacting metalworking trade in Chicago area. In reply please give details of your organization, lines now handled, etc. Reply Box 273, STEEL, Penton Building, Cleveland 13, Ohio.

Positions Wanted

STEEL SALESMAN—DISTRICT REPRESENTATIVE CALIBRE—DOMESTIC-EXPORT — Fifteen years successful sales performance desires active, challenging, selling-promotional position with producer or warehouse aiming to increase sales and requiring person with balanced inside-outside knowhow. Thoroughly experienced all phases and products. Excellent contacts. Knowledge languages. Salary or commission. Reply Box 275, STEEL, Penton Building, Cleveland 13, Ohio.

UNDISPLAYED CLASSIFIED RATES

ALL CLASSIFICATIONS
Other than "Positions Wanted"

	Set Solid	All Capitals	All Caps Leaded
50 words or less	$15.00	$19.20	$23.40
Each additional word	.30	.38	.47

POSITIONS WANTED

25 words or less	$ 3.60	$ 4.50	$ 5.40
Each additional word	.14	.18	.32

Cash with order necessary on "Positions Wanted"

Keyed address takes seven words. Replies forwarded without charge.

All classified pages are 3 columns, each column 2¼".

Forms close 10 days prior to publication date.

STEEL *The Weekly Magazine of Metalworking*
Penton Building, Cleveland 13, Ohio

CASH FOR USED TRANSFORMERS

Convert your used transformers to cash! Send us a description of them TODAY.
TRANSFORMERS AND COILS BUILT TO YOUR SPECIFICATIONS.
Send blueprints for prompt quotation.
TRANSFORMERS BOUGHT, SOLD AND REPAIRED
40 Years of Dependable Service

THE ELECTRIC SERVICE CO.
5329 Hetzel St., Cincinnati 27, Ohio

10 to 12 ft. lengths
ALL METALS
Also Screw Machine Products to Order
EASTERN
Machine Screw Corp.
New Haven, Conn.
Makers of H & G Die Heads

FABRICATED STRUCTURAL STEEL AND PLATE ESTIMATORS

Large Southern fabricator has openings for fabricated structural and/or plate estimators familiar with field erection costs. Preferably engineering graduates with two years practical experience. Forward resume with salary expected to:

Box 269
STEEL
Penton Building Cleveland 13, Ohio
All replies will be confidential

SUPERVISOR

Experienced in all phases of modern Cold Rolled Sheet and Strip production for a position with one of the major producers.

Please submit complete record of educational background and mill experience.

Salary to be commensurate with ability and position to be filled.

Reply Box 272, STEEL
Penton Building Cleveland 13, Ohio

DEVELOPMENT DESIGN ENGINEER

with
Furnace Construction Experience
LEE WILSON ENGINEERING CO., INC.
20005 West Lake Road
Cleveland 16, Ohio

CLASSIFIED

Employment Service

SALARIED POSITIONS $5,000 to $35,000. We offer the original personal employment service (established 45 years). Procedure of highest ethical standards is individualized to your personal requirements. Identity covered; present position protected. Ask for particulars. R. W. BIXBY, INC., 665 Brisbane Bldg., Buffalo 3, N.Y.

RAILWAY EQUIPMENT

FOR SALE
Used — As Is — Reconditioned

RAILWAY CARS— ALL TYPES
"SERVICE-TESTED"
FREIGHT CAR REPAIR PARTS
For All Types of Cars
LOCOMOTIVES
Diesel, Steam, Gasoline
Diesel-Electric
RAILWAY TANK CARS
STORAGE TANKS
6,000—8,000 and 10,000-Gallon
Cleaned and Tested
CRANES
Overhead and Locomotive
RAILS
New or Relaying
IRON & STEEL PRODUCTS, INC.

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Chicago 33, Illinois
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New York 7, New York
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"ANYTHING containing IRON or STEEL"

OVERHEAD CRANE

15 Ton P & H Overhead Traveling Crane, 46' Span with Cab Controls and all accessories, Driven by 3 DC Motors 125 Volt DC, with or without MG Set, Heavy Steel Mill Construction, Double Fish Belly Girders.

Bargain Priced

STEWART BOLLING & CO., INC.
3190 East 65th Street
Cleveland 27, Ohio
Michigan 1-2850

FOR SALE

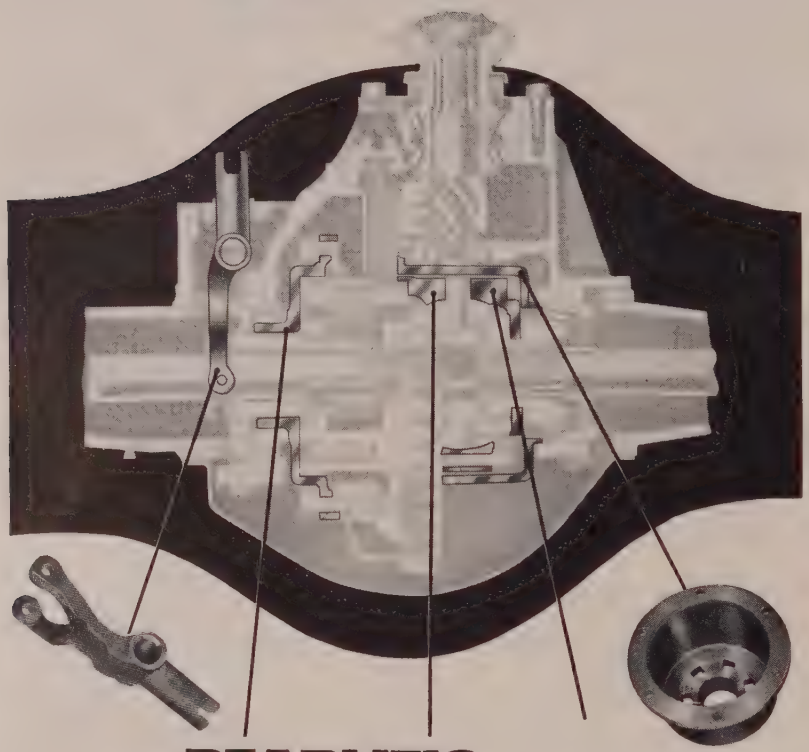
PANGBORN BLAST CLEANING ROOM
13' x 30'

No. 612 Type "MS" with complete recovery system. "BVR-7" abrasive separator. "AQ-1" hose machine. No. 6118 Type "CH-2" dust collector. All complete with motors and controls. New late 1950. Used on one Government contract. Asking less than half new price. Available immediately.

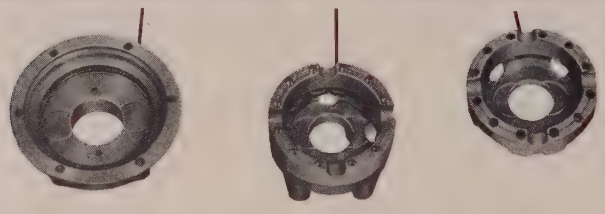
THE WOLF COMPANY
Phone 400
CHAMBERSBURG, PENNSYLVANIA

MOTORS • GENERATORS
TRANSFORMERS
NEW • REBUILT
WORLD'S LARGEST INVENTORY
ELECTRIC EQUIPMENT CO.
PHONE STATION COLLECT GL 6783
P.O. BOX 31 ROCHESTER 1, NEW YORK

for **HEAVY DUTY** service



PEARLITIC MALLEABLE CASTINGS



The 2-speed truck axle is a *must* under varying load and road conditions because it provides a tailor-made ratio for every condition. But it takes a severe beating under heavy duty conditions encountered in logging, mining, farming, etc.

That's why Eaton Manufacturing Company, leading producer of 2-speed axles, specifies pearlitic malleable — from National — for several vital parts. For Eaton knows that pearlitic malleable has high ultimate strength . . . resists wear under heavy loads at high speeds . . . possesses excellent non-seizing properties. In addition, pearlitic malleable can be given a smooth finish . . . can be either liquid or air quenched. And perhaps *most important of all, pearlitic malleable machinability index ranges from 80 to 90* (B1112 steel = 100).

Look your product over critically. Pearlitic malleable castings—from National—can replace costlier fabrication methods . . . can offer opportunities of reduction in weight, machining and assembly time. AA-1197

Photos: Courtesy Eaton Manufacturing Company

NATIONAL MALLEABLE AND STEEL CASTINGS COMPANY

Cleveland 6, Ohio

The Nation's largest independent producer of malleable and pearlitic malleable

(*Concluded from page* 126)

Bethlehem Steel Co., Bethlehem, Pa. (Noted in a previous issue, 1000 tons of shapes for this project also went to Bethlehem.)

155 tons, building, Western Electric Co., Allentown, Pa., through Baton Construction Co., general contractor, to American Steel Engineering Co., Philadelphia.

125 tons, Martha Washington School, Philadelphia, to American Steel Engineering Co., Philadelphia.

100 tons or more, defense facilities, North Concord, Vt., Corps of Engineers, Boston, to U. S. Steel Supply Division, U. S. Steel Corp., Boston; Joseph A. Bass Co., Minneapolis, general contractor.

REINFORCING BARS PENDING

540 tons, high school, Butte, Mont.; bids in.

380 tons, Washington Water Power Co., service center, Spokane, Wash.; bids in.

230 tons, treatment plant, sewage project; bids in to William E. Conley, secretary, 10023—16th Ave. S. W., Seattle 66, Washington. July 11.

135 tons, Nike installation, Poulsbo, Wash.; bids in.

52 tons, plus other steel items, 107-ft slab bridge; bids to county commissioners, Walla Walla, Wash., July 8.

Unstated, pumping plant and miscellaneous, Hanford Works, Washington state; general award to Hoffman Construction Co., Portland, Oreg., low at $665,800.

Unstated, Montana state highway projects; 161-ft overpass, Silver Bow county, and a 369-ft bridge, Valley county; bids to Helena, Mont., June 29

PLATES . . .

PLATES PLACED

100 tons, 150,000-gal water tank, Parma, Idaho, to Chicago Bridge & Iron Co., Seattle, low at $26,900.

PLATES PENDING

100 tons or more, two steel water tanks, Beaver Ammunition Storage, Oregon; bid call of June 20 canceled by Ft. Lawton, Wash., office; new bids planned during next fiscal year.

Unstated, 3900-ft, 30-in. water pipe line; bids to Pend Oreille PUD, Newport, Wash., July 18

PIPE . . .

CAST IRON PIPE PLACED

133 tons, water system improvements at Pinehurst, Camas and Marysville, Wash., and Maple Park, Oreg., to U. S. Pipe & Foundry Co., Seattle.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Lake Superior & Ishpeming, one 1600-hp diesel unit, to Alco Products Inc., New York.

Illinois Terminal, twelve 1200-hp diesel switchers, to Electro-Motive Division, General Motors Corp., La Grange, Ill.

Norfolk Southern, two 1600-hp all-service diesel units, to the Baldwin-Lima-Hamilton Corp., Eddystone, Pa.

RAILROAD CARS PLACED

Seaboard, 1000 box cars to Pullman-Standard Car Mfg. Co., Chicago, 200 covered cement cars to ACF Industries, New York, and 200 phosphate cars to Bethlehem Steel Co.'s Johnstown, Pa., plant.

St. Louis-San Francisco, 2000 box cars, of which 250 may be placed with its own shops; also inquiring for 200 seventy-ton gondolas.

Erie, purchase of one-thousand 50-ft 6-in. box cars authorized.

Southern, 750 hoppers to ACF Industries, New York, and 750 hoppers to the Pullman-Standard Car Mfg. Co., Chicago.

Western Maryland, 400 roller-bearing hopper cars, to Bethlehem Steel Co. shops at Johnstown, Pa.

Toronto, Hamilton & Buffalo, twenty 70-ton covered hopper cars to the National Steel Car Corp.

Western Fruit Express, one-hundred 70-ton refrigerator cars to the Pacific Car & Foundry Co., Renton, Wash.

Saudi Arabia Railway, one rail-diesel car, to the Budd Co., Philadelphia.

Advertising Index

Aetna-Standard Engineering Co., The ..... Inside Back Cover
Ajax Engineering Corporation 52
Allegheny Ludlum Steel Corporation 46
Allis-Chalmers ..... Inside Front Cover
American MonoRail Co. 91
American Screw Co. 98
American Welding & Manufacturing Co., The 28
American Zinc, Lead & Smelting Co. 103
American Zinc Sales Co. 103
Arcos Corporation 96, 97
Atlas Car & Mfg. Co., The 10

Babcock & Wilcox Co., The, Refractories Division 16
Baker-Raulang Co., The 3
Bethlehem Steel Co. 1
Bixby, R. W., Inc. 127
Bolling, Stewart & Co., Inc. 127
Browning, Victor R., & Co., Inc. 120
Bullard Co., The 65

Carboloy Department of General Electric Co. .. 130
Challenge Machinery Co., The 6
Chemsteel Construction Co., Inc. 121
Chicago Rawhide Manufacturing Co., Oil Seal Division 43
Cincinnati Cleaning & Finishing Machinery Co., Inc. 54
Cincinnati Milling Machine Co., The 44
Cincinnati Shaper Co., The 22, 23
Cities Service Oil Co. 112
Cleveland Tramrail Division, The Cleveland Crane & Engineering Co. 78
Cold Metal Products Co., The 75
Colorado Fuel & Iron Corporation, The, Wickwire Spencer Steel Division 62
Continental Industrial Engineers, Inc. 126
Cooper Alloy Corporation 55
Cowles Chemical Co. 114
Cowles Tool Co. 118
Crucible Steel Casting Co. 122
Crucible Steel Company of America 66

Detroit Steel Corporation, Reliance Steel Division 32

Eastern Machine Screw Corporation, The 120, 127
Eaton Manufacturing Co., Reliance Division .. 61
Electric Equipment Co. 127
Electric Service Co., The 127
Erie Foundry Co. 117
Exide Industrial Division, The Electric Storage Battery Co. 94

Farrel-Birmingham Co., Inc. 26
Foster, L. B., Co. 121

Garlock Packing Co., The 95
General Electric Co., Carboloy Department .. 130
Gisholt Machine Co. 24
Globe Steel Abrasive Co. 89
Great Lakes Steel Corporation 48

Handy & Harman 88
Hannifin Corporation 123
Heppenstall Co. 56
Hevi Duty Electric Co. 116
Houghton, E. F., & Co. 86

Industrial Products Suppliers 122
Inland Steel Co. 34
Iron & Steel Products, Inc. 127

Jones & Laughlin Steel Corporation 59

Keystone Drawn Steel Co. 120

Laclede Steel Co. 84
Landis Machine Co. 13
La Salle Steel Co. 11
Lovejoy Flexible Coupling Co. 120

Metal Blast, Inc. 81
Monsanto Chemical Co., Organic Chemicals Division 7

Naresco Equipment Corporation 90
National Malleable & Steel Castings Co. 128
National-Standard Co. 101
National Steel Corporation 48
Norgren, C. A., Co. 12
Northern Engineering Works 25

Ohio Crankshaft Co., The 2
Ottawa Steel Products, Inc. 121

Pangborn Corporation 129
Pittsburgh Crushed Steel Co. 123
Pittsburgh Plate Glass Co., Brush Division ... 118
Poole Foundry & Machine Co. 122
Pyrene-C-O-Two 18

Reliance Division, Eaton Manufacturing Co. 61
Reliance Steel Division, Detroit Steel Corporation 32
Republic Steel Corporation 14, 15
Rollway Bearing Co., Inc. 85
Ryerson, Joseph T., & Son, Inc. 31

Seymour Manufacturing Co., The 5
Shell Oil Co. 20, 21
Square D Co. 93
Steel Shot & Grit Co. 123

Thomas Flexible Coupling Co. 115
Timken Roller Bearing Co., The, Steel & Tube Division ..... Back Cover

Unit Crane & Shovel Corporation 105
United Engineering & Foundry Co. 17
United States Rubber Co., Mechanical Goods Division 19
United States Safety Service Co. 118

Veeder-Root, Inc. 4
Verson Allsteel Press Co. 51
Vickers Electric Division, Vickers, Inc. .. 8, 9

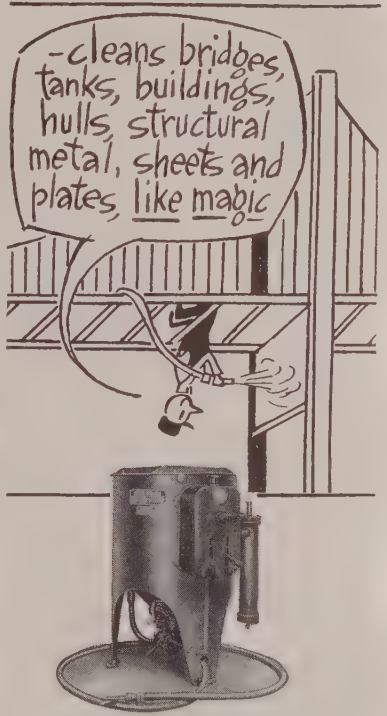
Ward Steel Co. 92
Westinghouse Electric Corporation 77, 125
Wheland Co., The 92
Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corporation 62
Wilson, Lee, Engineering Co., Inc. 17
Wolf Co., The 127
Worcester Stamped Metal Co. 122

Table of Contents, Page 5

Classified Advertising, Page 127

PANGBORN BLASTS
by don herold

COST-CUTTING STORY OF THE PANGBORN BLAST CLEANING MACHINE



(Advertisement)

FALLACIES AND FACTS FOR CARBIDE BUYERS

Specifying "or equivalent" carbide on tool prints forces toolmakers to use cheapest grade

Blunt — but needed — this clarification by the manufacturer of Carboloy Cemented Carbide shows how the practice of designating "equivalent" grades works against the user of carbide tools.

Placing the phrase "or equivalent" on a tool print used to obtain competitive toolmakers' bids, does this:

It forces each toolmaker to quote on the basis of using the *cheapest* carbide — not necessarily the *best* carbide for your job.

The reason is obvious: To be competitive these days means submitting the lowest bid. Justifiably, your toolmakers try to keep their costs low. Consequently, they will use the cheapest available carbide, *if you give them a written mandate practically ordering them to do so.*

And you *do* give competing toolmakers this written mandate to buy the cheapest carbide, by giving them the option of selecting a so-called "equivalent" grade. By this practice, you *force* each toolmaker to protect himself *by also looking for the cheapest available grade. As a result, the purchase is not made in terms of your production ability. It's made solely on price.*

At the bottom of this kind of purchasing is the increasing promotion by some carbide manufacturers of the so-called "industry standard" or "equivalent" charts.

There are no "equivalent" charts

It should be recognized that no true industry standard or equivalent charts exist. Charts which show various manufacturers' grades of carbide, and suggest the types of machining operations for these grades, are "recommendation" charts. They were originally intended for use only to show the *types of machining* a certain group of grades would do. *They were never intended to be used to show that the grades of carbide within a certain category would perform equally well and, consequently, could be used interchangeably.*

However, some carbide manufacturers have sought to benefit themselves by having their grades thought of as being "equivalent" to certain other carbides on the market. This attempt to sell by "association" is the real reason behind the emphasis on getting carbide users to accept the so-called "equivalent" method.

"Carboloy" cannot be used to mean any brand of carbide

Hand-in-hand with this type of carbide selling is the increasing word-of-mouth use of the registered Carboloy name to mean *any* brand of carbide. The name "Carboloy" is the registered trademark of the Carboloy Department of General Electric Company. As such, it is the brand name of our products alone. Strict insistence on the proper use of this name is our way of protecting both our customers and ourselves.

In many instances, carbide users have complained to us that they have purchased tools with "Carboloy" which did not perform to their expectation or past experience. Investigations showed that they had really purchased another manufacturer's carbides, but had been assured they had received "Carboloy."

Such free use of our name, we suspect, is a Penalty of Leadership.

Your only real test — *production ability*

We offer this suggestion — when you buy or use carbides, find out for yourself which carbide will give you the *most production.* If you care to, ask a Carboloy sales engineer to help you run the tests — but *you* set them up, in *your* own shop. Then compute your carbide cost based on *production ability.*

We have hundreds of in-plant case histories proving what our grades will do under any operating conditions. They show you how you get more for your carbide dollars when you specify *Carboloy* cemented carbides from your distributor or toolmaker. Write, or call, for assistance in getting the most out of your tooling dollars.

"Carboloy" is the trademark for products of the Carboloy Department of General Electric Company

CARBOLOY

DEPARTMENT OF GENERAL ELECTRIC COMPANY

11141 E. 8 Mile Road, Detroit 32, Michigan

Carboloy Created-Metals for Industrial Progress

There's Never Any Question About a Bethlehem Drop Forging

You can be sure of top quality in a drop forging made by Bethlehem.

You can be sure that the steel is right, that the dies are right. You can be sure that the forging work is done conscientiously by men long skilled in their trade.

Bethlehem shops furnish an almost endless variety of designs for the oil, mining, aviation, automotive, electrical, and other industries. Both quality and variety are made possible by excellent facilities, which include modern die-sinking shops, steam and board drop hammers to 8,000 lb, mechanical presses to 3,000 tons, upsetters to 9 in., and full heat-treating equipment.

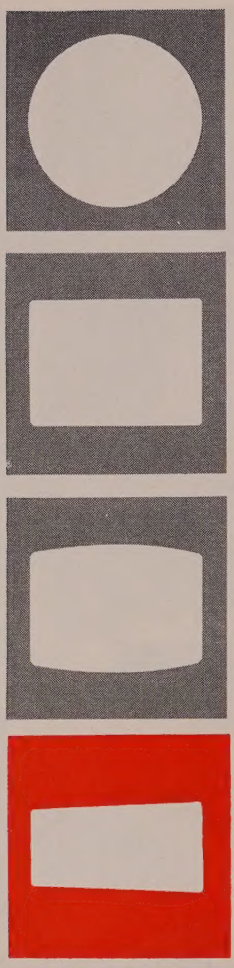
When you are figuring your next requirements for closed-die forgings, we'd appreciate the chance to talk with you. We offer excellent service, a first-class product, and competitive prices and deliveries.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM STEEL



Ball Bearings

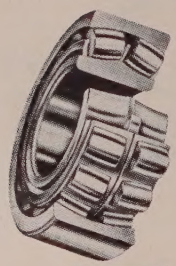
Cylindrical Roller Bearings

Spherical Roller Bearings

And now

Tyson **Tapered Roller Bearings***

The broadest product line in the anti-friction field.



SKF—and its field engineers—are now adding Tyson Tapered Roller Bearings to their recommendations.

Constantly working to broaden the SKF line—to make "the right bearing in the right place" a watchword throughout industry, SKF has recently introduced new lines of pillow blocks, styles and sizes of Max type ball bearings, the improved Type "C" Spherical roller bearing.

And *now* SKF offers Tyson Tapered Roller Bearings.

This means that from SKF you get the broadest range of types and sizes of anti-friction bearings *and* the most extensive anti-friction experience.

More today, than ever before, dealing with SKF Field Engineers assures you of the right bearing in the right place. 7646

*Manufactured by **TYSON BEARING CORP.**, affiliated with SKF Industries, Inc. as a subsidiary.

SKF®

BALL AND ROLLER BEARINGS

SKF INDUSTRIES, INC., PHILADELPHIA 32, PA.,
manufacturers of SKF *and* HESS-BRIGHT® *bearings.*

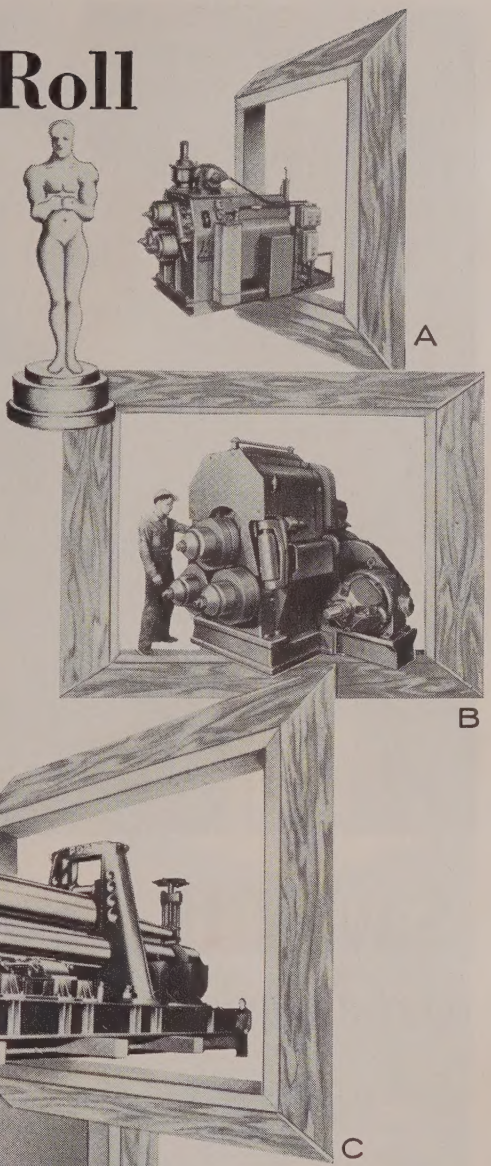
From Airplane Wing Skins to Structural Shapes

No Matter What You Roll

you're sure to win "PRODUCTION OSCARS" with Kling ANGLE or PLATE ROLLS

You can duplicate the happy experience of Douglas Aircraft Co., Inc. with Kling-Pope Plate Rolls; and of Commercial Tank & Welding Co. with Kling Angle Rolls. These are only two of the many plants that have captured coveted "Production Oscars" for performance records on diverse jobs with Kling Rolls.

Kling's sixty-three year engineering and production experience —always at your service—is concentrated into all the many Kling Metal Fabricating Machines. Send for bulletins on the specific machines in which you are interested or New Complete Line Folder.



A. No. ½ Kling Angle Roll with Power Raise

B. Nos. 1-A and 2-A Kling Angle Rolls

C. 3" x 20' Pyramid Type Kling-Pope Plate Roll

D. ¾" x 30' Initial Pinch Type Kling-Pope Plate Roll

Since 1892

Kling

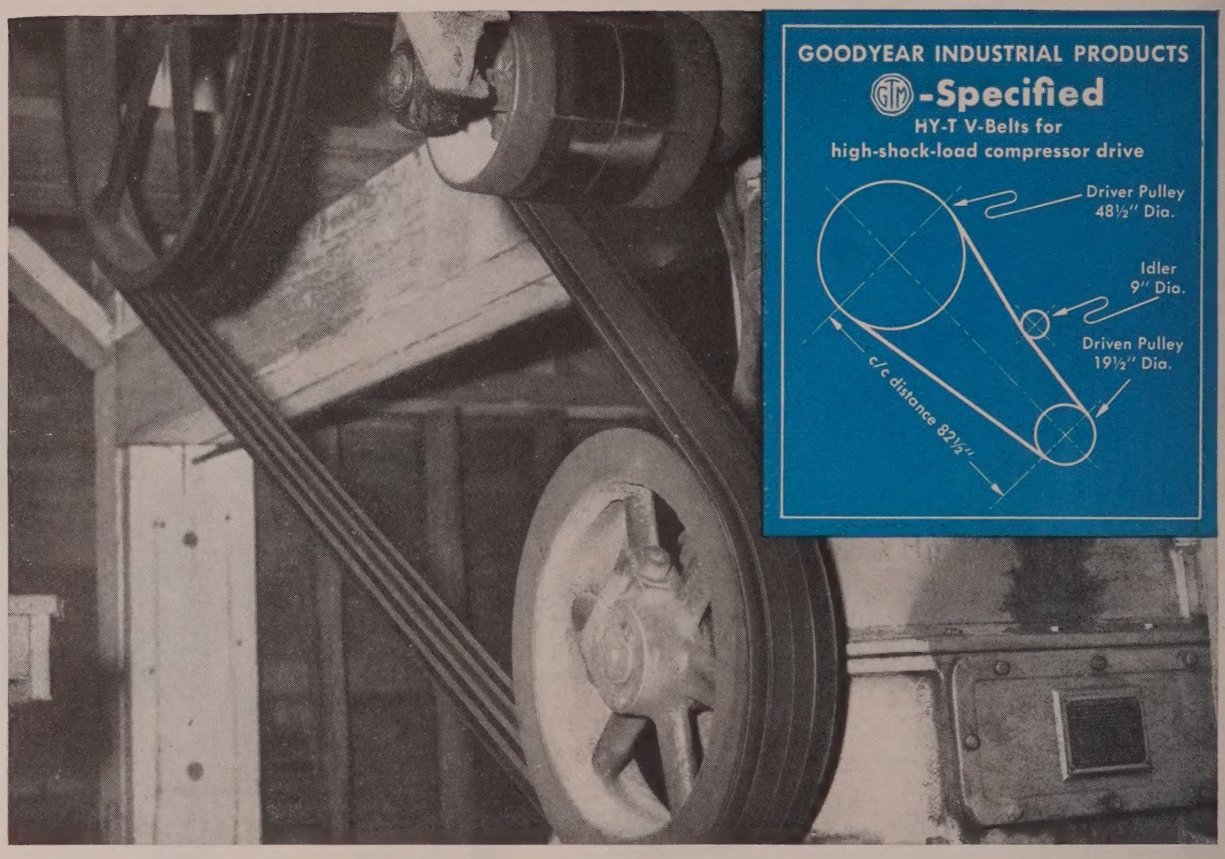
931

BROS. ENGINEERING WORKS

1320 N. KOSTNER AVE. • CHICAGO 51, ILLINOIS

Makers of Friction Saws; Shears; Punches; Combination Shear, Punch and Coper; Angle and Plate Bending Rolls.

Export Distributor: Simmons Machine Tool Corp., 50 E. 42nd Street, New York 17, N. Y.



Saved the cost of 3 sets of belts

and still going strong on tough compressor drive

BELT-BREAKING problem for a Southern lumber company was overloading on a compressor drive. Frequent and sudden shock-loads kept belt-life down to 6 months, meant costly shutdowns and expensive replacements.

Called in for consultation, the G.T.M.—Goodyear Technical Man—recommended HY-T V-Belts. Their multiple plies of chemically produced 3-T CORD are tempered by Time, Tension and Temperature to eliminate surplus stretch. They can carry 40% greater horsepower loads at speeds from 100 to 6,000 f.p.m.—have maximum resistance to oil, moisture, mildew and static generation.

Result: The HY-T V-Belts easily took the shock-loads in stride, are still running after 24 months—4 times the service life of the standard V-belts they replaced—saving the cost of 3 sets of belts to date.

If you have drive troubles call in the G.T.M.—the man who knows V-belts best. Contact him through your Goodyear Distributor or by writing to:

Goodyear, Lincoln, Nebraska or Akron 16, Ohio

YOUR GOODYEAR DISTRIBUTOR *can quickly supply you with Hose, Flat Belts, V-Belts, Packing or Rolls. Look for him in the yellow pages of your Telephone Directory under "Rubber Products" or "Rubber Goods."*

Hy-T—T. M. The Goodyear Tire & Rubber Company, Akron, Ohio

HY-T V-BELTS with 3-T CORD by

GOODYEAR

THE GREATEST NAME IN RUBBER